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The OIL WEEKLY

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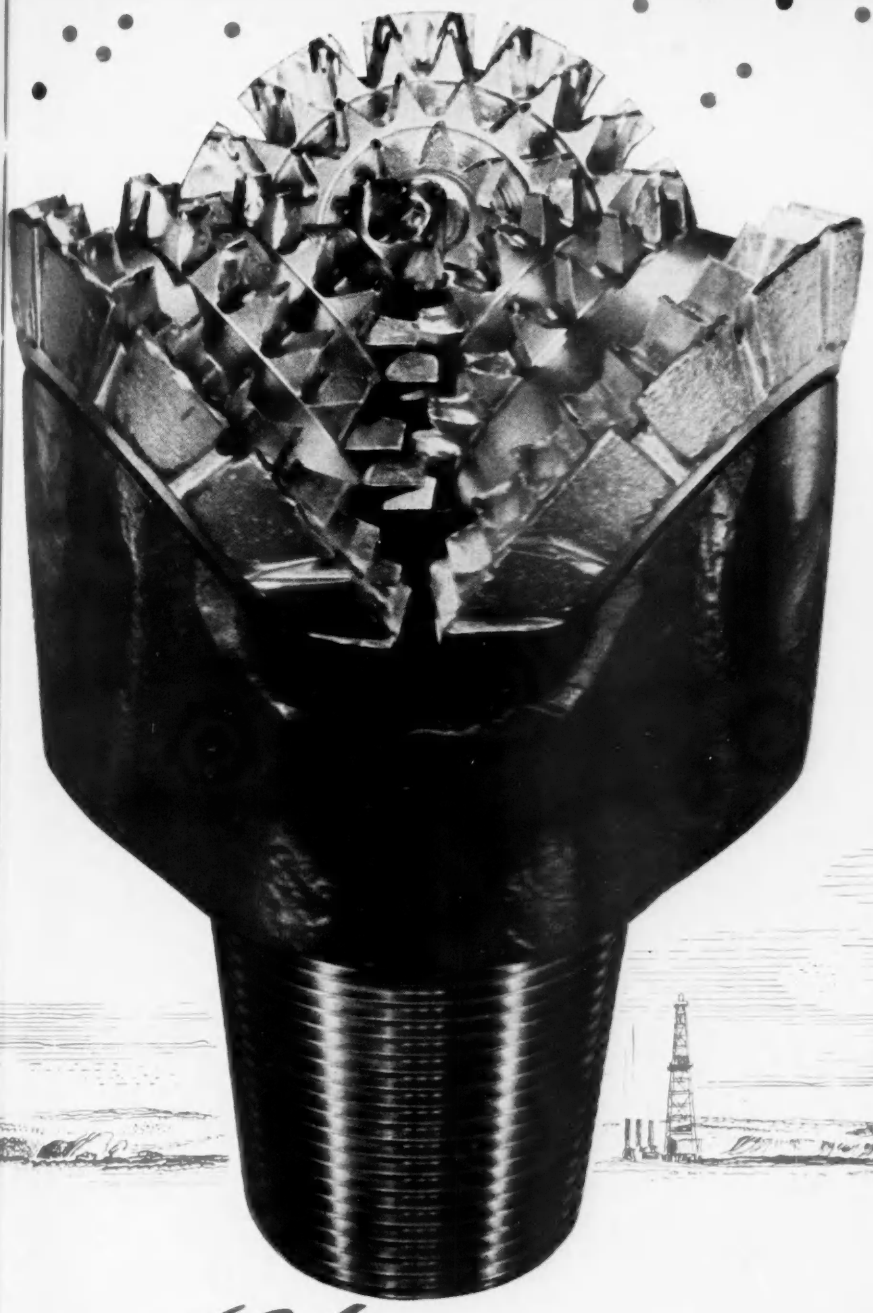

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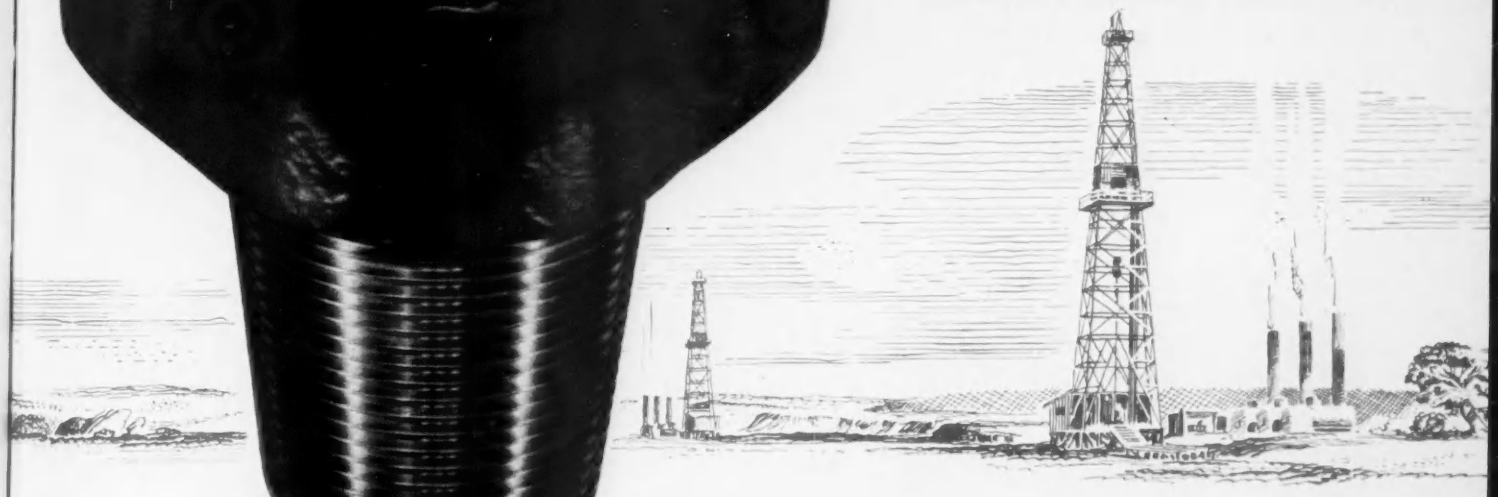

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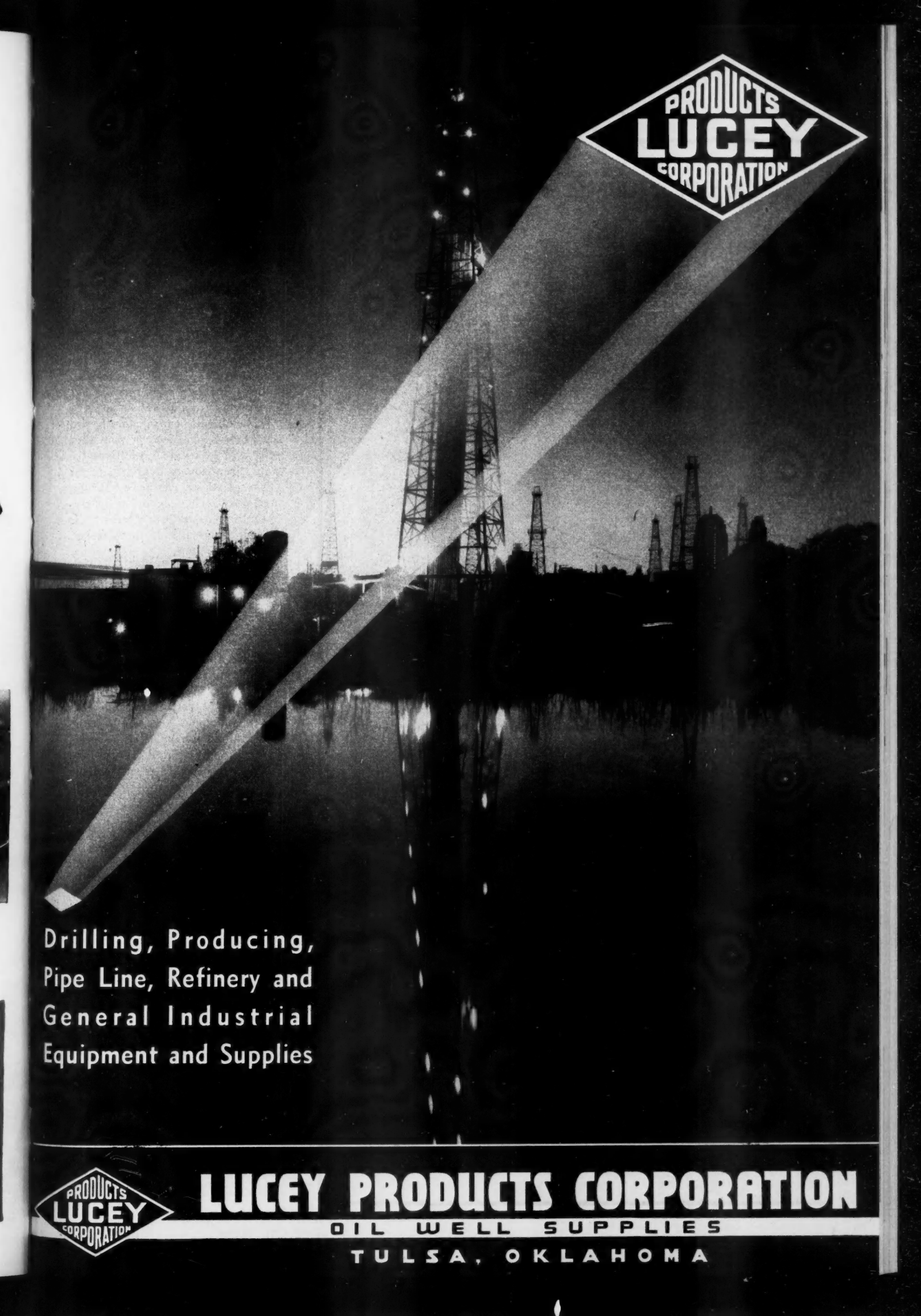

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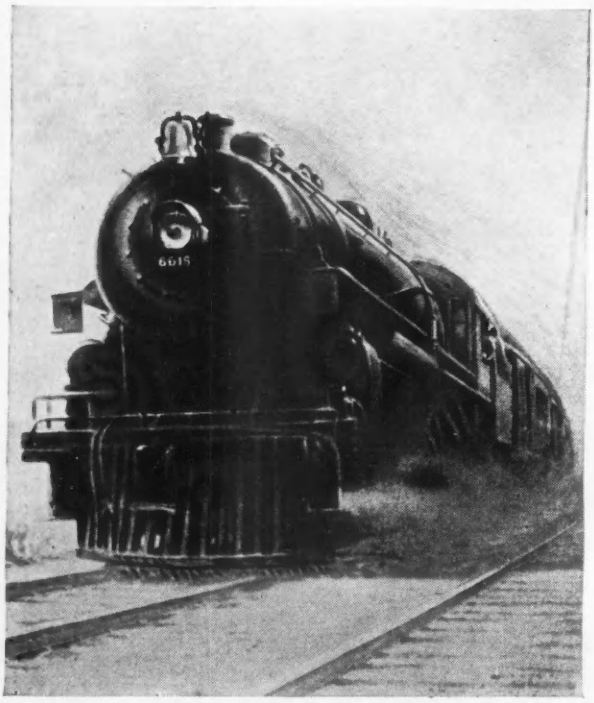

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Looking Ahead

WITH THE EDITOR

MANY logging methods are available for determining the nature, extent and content of the formations penetrated by a drill hole. Although each of these procedures has its own merits and also certain limitations, most logging problems can generally be solved reasonably well—and at a price which is not prohibitive—by using an adequate combination of some of these methods. Which methods to use depends, of course, upon the particular problems to be solved, the area, and other factors.

The application of electrical well logging and of caliper well logging has been presented in THE OIL WEEKLY by Hubert Guyod, former research and development engineer for Halliburton Oil Well Cementing Company and now well logging consultant in Houston. In view of the interest shown by geologists and petroleum engineers for these articles, THE OIL WEEKLY and Halliburton have again asked Guyod to investigate the application of temperature measurements to the logging of drill holes and to other problems.

The result of this investigation will be presented in a series of seven articles, "Temperature Well Logging," which will begin in the October 21 issue. The first three articles discuss briefly the temperature distribution in the earth's crust, while the other four articles give an exact picture of the possibilities of the temperature method for the logging of wells.

Next week's issue will also contain "Influence of Clay Content on Water Conductivity of Oil Sands," by T. F. Bates, R. M. Gruver and S. T. Yuster.

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for the drilling-producing-pipe line industry

PETROLEUM REFINER and The REFINERY CATALOG
for the refining-natural gasoline industry

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The OIL WEEKLY

ENGINEERING NEWS STATISTICS

R. L. DUDLEY, President, Publisher A. L. BURNS, General Manager

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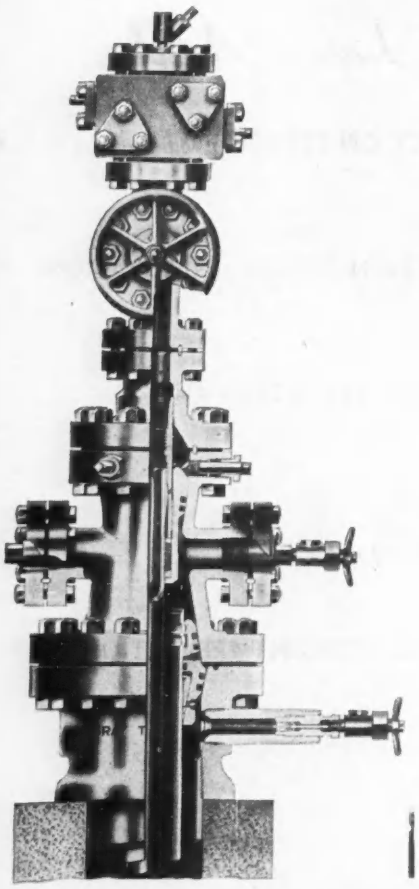

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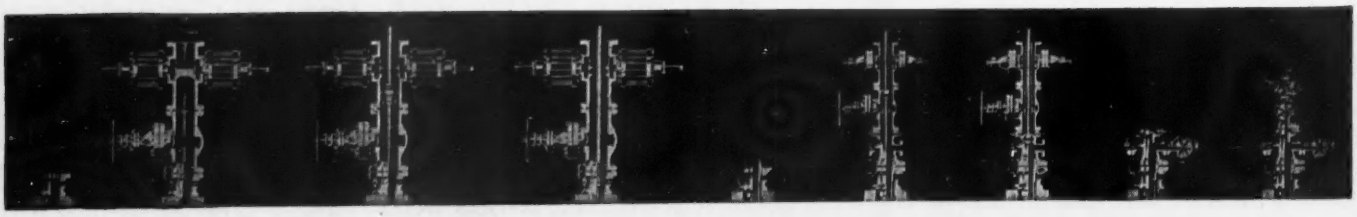

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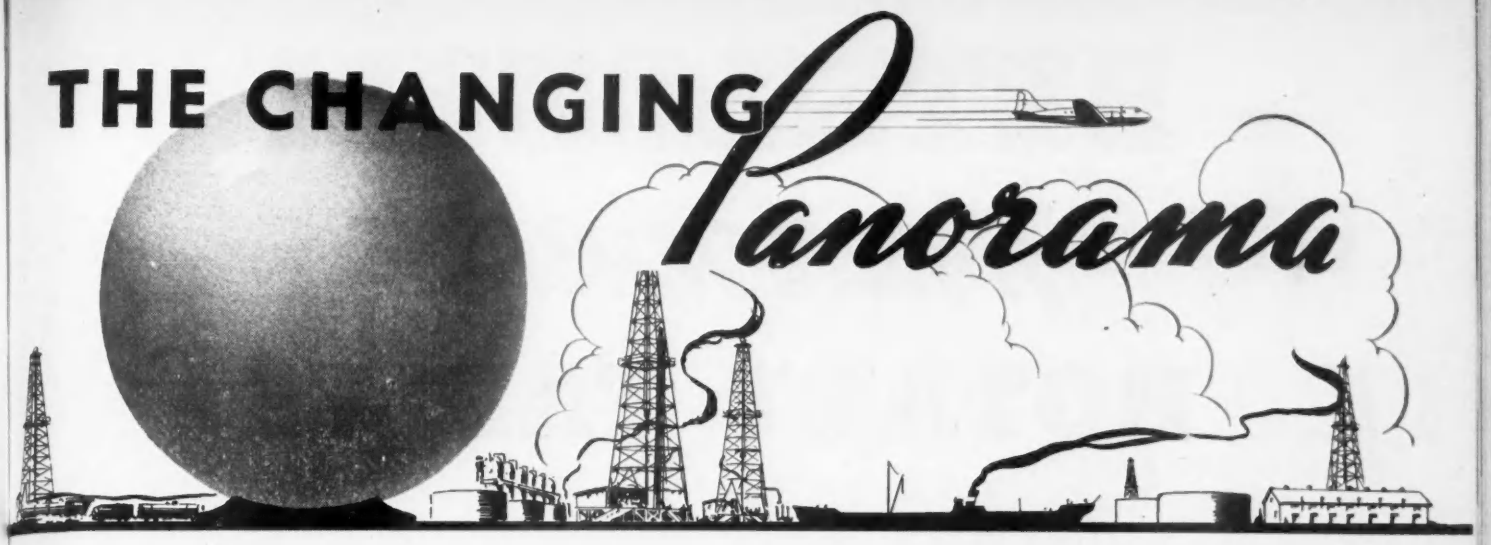
THE CHANGING Panorama



Continental Shelf Oil Possibilities

CONSIDERABLE controversy has developed between high government officials (Joint Chiefs of Staff) and the oil industry over a recent government statement that at the present rate of production and with our present known reserves, this country will have to import 50 percent of its oil 20 years hence. Undoubtedly their greatest concern is keeping within this country's defendable boundaries a vast available reserve which would be ready on short notice to supply military needs in case of future wars. Such a point of view can certainly be appreciated by those in command of our past two wars when our ready supply of petroleum played a major role in Allied victory. However, this point of view can hardly be shared by industry as a basis of importing more oil at this time or in the near future. The oil industry is confident of its ability to meet future demands . . . which confidence is justly verified by past oil history. Advancements in technology and the unending search for new reservoirs are basis for this industry confidence. However, there is a point of saturation, which when reached (even this is a big unknown) will limit the amount of oil readily available within the boundaries of this country.

There is a very important matter which should be pointed out to these high Army and Navy chiefs which would, if fully recognized, relieve much of the anxiety that has led to talk of importing oil in order to maintain our domestic reserves.

To date, the Gulf Coast Section surrounding the Gulf of Mexico is without a doubt, the richest oil producing area in the world. Its vast known remaining reserves amount to an estimated 4,021,847,000 barrels. Its daily production is approximately a million barrels per day. Inspection of this area instantly shows that the area is heavily dotted with oil fields, the extent of which is the shore line of the U. S. along the Gulf. It is a known fact that probably 15 or 20 large domes exist within the limits of the continental shelf. It would not be too great an assumption to say that this area covered by water holds within its deep formations untouched oil reservoirs of capacity equal to those found on the surrounding shores.

For several years engineering research and geological exploration have been carried on by several large oil companies to determine the practicability of drilling and producing oil from this water-covered area. Such exploration programs are now being conducted off the east coast of Florida and off the California coast. Similar programs are being carried on in the offshore waters of the Gulf Coast. Progress made by these organizations to develop more oil reserves is astounding. Within two or three years, these enterprising companies will be drilling wells 10 and 20 miles from shore. And it would be a safe bet to say that equally large reservoirs of petroleum will be found in this unexplored territory.

Oil Wages, Prices

INCREASES in crude prices have not been out of line with rises in wages in the production division of the industry, it is indicated by a survey in California. The Oil Producers Agency of California made a survey of wages and hours, and found that current wages in the production division of the California oil industry average $1.38 per hour, an increase of 34.51 percent over the average of $1.02 per hour on January 1, 1941.

Since January 1, 1941, major companies have put into effect an average increase of 38-15 percent, the survey showed, while principal minors (producers of 45,000 barrels or more per month) raised wages 33.65 percent and independents an average of 33.67 percent.

Job Security Fetish And Its Answer

OB security, which we've heard a lot of talk about since the days of the depression, isn't everything and the fellows who make a fetish of that goal, and that alone, might miss out on some of the following most desirable attainments:

1. Employment of their own choosing—well-paid, productive, worthwhile and satisfying work.

2. Opportunity to grow and develop materially, intellectualy, socially and spiritually.

3. Political freedom, the opportunity for self-government through chosen representatives and the attendant individual liberties of person and of property, freedom of speech, press, worship and peaceful assembly.

4. Opportunity to live in a progressive economy that affords an abundance of things for the worker's material welfare and under a government that promotes these goals for all the people and their children.

5. Opportunity to live in a world of peace—at home and abroad.

These points were emphasized last week by Paul G. Hoffman, national chairman of the Committee of Economic Development who said it is relatively simple to provide jobs for all "if the citizens of a state are willing to give up their freedoms, if they are willing to risk being purged or put into a concentration camp and if they are willing to make job security the one objective of their existence."

'Maintenance of the American system of free enterprise and capitalism is about the only way that ALL the objectives can be attained simultaneously and continuously. Best proof is attested by the economic and political progress made by the U. S. since its founding, Hoffman declared.

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The Week's News

DOMESTIC crude production this year may reach a new record of 1724 million barrels and total demand may amount to 1810 million barrels, the Bureau of Mines estimates. Forecast demand for domestic oil for October is placed at 4.771 million barrels daily, a drop of 19,000 barrels from September. Page 43.

Tank Car Problem—Administration efforts to solve the high-pressure tank car problem continue. NPC committee delves into matter. Story below.

East Texas Purchases—Companies continue to acquire East Texas production. Readjustment of price for 38-40 Woodbine oil forecast. Page 43.

ASME Conference—Four hundred engineers attend Petroleum Mechanical Engineering conference of ASME at Tulsa. Page 41.

Natural Gas Act Changes—Suggestions for amending the Natural Gas Act have been made by Industry Committee. Page 40.

NPC Problem for Krug—Resignation of R. H. Colley from NPC post creates OGD problem for Secretary Krug. Story below.

Big Inch Bids—The bid reportedly regarded as "best" by WAA is Big Inch Inc.'s $110 million for the two lines, which would be used as common carriers of oil. Story below.

Gas Reserve Estimate—With natural gas reserves estimated at 148 trillion cubic feet, delegates to American Gas Association hopeful for clarification of Natural Gas Act as gas industry enters period of great expansion. Page 42.

Teapot Dome—Return of Teapot Dome to the Interior Department for private leasing is indicated. The Navy said a year ago it was agreeable to the transfer. Page 40.

Oil Co-op Developments—A worldwide petroleum cooperative was organized at the meeting in Zurich. Page 46. Co-op advantages in tax exemptions seem headed for congressional airing. Story below.

Big Inch Buyer Rumored

At the weekend there were rumors that the WAA utility branch would recommend acceptance of the offer of Big Inch Oil, Inc., to purchase both lines for use as petroleum common carriers for $110 million of which $66 million would be cash and $44 million in 30-year debentures.

The recommendation may be laid before the WAA Special Advisory Committee at its meeting this week, although there has been no indication whether it would be in line with thinking on higher official levels.

Big Inch Oil, Inc., was organized for the purpose of bidding on the two lines. Charles H. Smith signed the bid as president of the company, but it is reported that if the organization is successful in acquiring the two systems, Joesph M. Williams of The Atlantic Refining Company will become president of the permanent corporation.

Others said to be interested in the company include Harry O. King, a director of Texas Gulf Producing Company; C. Ross Holmes, engineer well known in the oil industry; Oscar S. Cox, formerly with the Department of Justice and former general counsel of the Foreign Economic Administration; William F. Downs, president of Day and Zimmerman, engineering company; Admiral Frederick R. Harris, retired, consulting engineer; Howard Erskine of Penn Mutual Life Insurance Company and Gerald E. Cruise, engineer.

Sun Fleet Restored

Sun Oil Company has acquired three new tankers from the government to restore its fleet to prewar strength, the first of which was delivered October 10. The three ships will be renamed the "Sunoil," "Sunbeam" and "Atlantic Oil."

Tax Exemption Advantages Held by Co-ops To Get Congressional Review

The House Small Business Committee was split wide open last week over a report on cooperative tax exemptions issued last April by Chairman Wright Patman of Texas (THE OIL WEEKLY, April 15).

In a letter to Patman, Rep. Walter C. Ploesser of Missouri, charged that the report breached a committee agreement that it was to be purely tentative and contain no conclusions, and declared that when Congress meets he will move quickly to have the report completely re-examined.

Ploesser also charged that Patman had written to cooperatives urging them to get behind the report "and to defend it to the death because you warned them that a hornet's nest has been stirred up and that private business is going to do its best to overthrow the report."

Patman's report was a "yes and no" affair, stating that the coops do have some tax advantages over other forms of business but that the competitive advantage gained thereby is negligible.

Ploesser agreed that the tax exemptions enjoyed by the coops are entirely legal and constitutional, but asserted that the conclusions which followed were "entirely unsupported by any factual evidence" and constituted "a completed whitewash of cooperatives from the standpoint of tax exemption."

Statements that the tax advantages of co-ops are relatively small and in no way give them an undue advantage over private business was challenged by Ploesser.

Krug's Problem

NPC Post Resignation Creates Problem for Krug

Resignation of R. H. Colley, president of The Atlantic Refining Company from membership on the National Petroleum Council has raised Interior Secretary J. A. Krug's first important problem in connection with the Oil and Gas Division. Colley said that in the light of views he had expressed at the council meeting September 26 he had reconsidered his acceptance of appointment and wished to withdraw it.

At the council meeting, Colley read a two-page statement raising the questions of the need for the organization and its possibilities of service.

During the week, Krug and acting OGD Director Ralph K. Davies went into a huddle with a view to answering charges raised by Colley and probably asking him to reconsider his resignation.

NPC's Pressure Tank Group Surveys Shortage of Cars

The NPC pressure tank car committee headed by Charles R. Musgrave of Phillips Petroleum Company last week considered the situation raised by the Army's decision to recall 45 cars which had been leased out to oil companies, which was not solved by Reconversion Director John R. Steelman's directive.

The committee had before it telegraphic reports as to the tank car situation of a number of oil companies. Following its survey, the committee met with representatives of various interested federal agencies in an attempt to see what relief could be provided.

Steelman's directive ordered ODT to locate 525 petroleum tank cars for conversion into ammonium nitrate solution carriers, and directed WAA to discontinue the sale of high-pressure cars normally used in the transportation of propane, butane and similar chemicals until after the present emergency.

Texas Mid-Continent Group Schedules Victory Meeting

The Texas Mid-Continent Oil & Gas Association's first general membership meeting since 1943 which will convene in Houston October 17-18 has been christened the "Victory Meeting of the Texas Oil Industry" and will have for its theme petroleum's part in helping win the war.

Fred W. Shield

The keynote address by James Forrestal, Secretary of the Navy, is slated Friday afternoon on "Oil and Victory." Harry C. Wiess, president, Humble Oil & Refining Company, will introduce the Navy Secretary.

Russell B. Brown, general counsel of the Independent Petroleum Association of America, will speak on "National Oil Policy" at the opening session Thursday.

Cedric Foster, noted news analyst, will be honor guest at the association's dinner for the press Thursday night.

William R. Boyd. Jr., president of the American Petroleum Institute, and Maston Nixon, former president of the association, will present distinguished service awards to two Texas oil men.

John S. Redditt, Lufkin, chairman of the State Highway Commission of Texas, will discuss "The Oil Producer and the Gasoline Tax," and former State Senator Clint C. Small of Austin, will talk on "Price-Fixing by Governmental Agencies" at the Thursday sessions.

Also scheduled for Thursday is the annual president's address, by Fred W. Shield of San Antonio, and reports by Paul W. Pitzer, Breckenridge, chairman of the theft prevention committe; Curtis G. Condra, resolutions committee, and W. A. Moncrief, nominating committee, both of Fort Worth.

The association's golf tournament also will be resumed, with teams from Texas oil centers competing Friday morning, October 18, at River Oaks Country Club.

Return of Teapot Dome for Leasing Activity Indicated

Reports from the Rocky Mountain area that Commodore William G. Greenman, director of naval petroleum reserves, had stated that the Navy Department would have no objection to the transfer of Naval Reserve No. 3 (Teapot Dome) to the Interior Department, where it might be offered for exploitation under the Mineral Leasing Act, brought from department sources last week a reminder that this was the view expressed before a congressional committee in November, 1945.

At that time, Greenman testified that he had previously said Teapot Dome had no value from a military point of view as far as future oil in quantity was concerned, and the department would not oppose its return to Interior.

An earlier report on the naval reserves by the Senate Naval Affairs Committee said Teapot Dome originally was believed to contain a very large potention supply, estimated by the Bureau of Mines originally at not less than 125 million barrels, but was then conceded to hold only from 15 to 20 million barrels.

The reserve never entered into the Navy Department's plans for either wartime production or exploration as a future source of supply, and attention has been centered exclusively upon the two other reserves, in Elk Hills and Alaska.

Return of Teapot Dome to the Interior Department would require congressional action, and the recent revival of the subject may indicate a move to that end.

Rubber Control to End

International controls over the allocation of crude rubber supplies will be lifted next January 2, and the combined rubber committee then will liquidate itself. The committee's decision was based on the rate of increase in Malayan production, which is exceeding original expectations.

Represented on the combined rubber committee are the United States, United Kingdom, Netherlands, France, Belguim and Canada.

Natural Gas Act Changes Listed by Industry Group

Various amendments designed to clarify and make more workable the Natural Gas Act have been proposed in a brief filed with the Federal Power Commission by the Natural Gas Industry Committee in connection with FPC's natural gas investigation.

The amendments provide for sharply curtailing FPC's powers, prohibiting FPC from rate regulation, authority over production and gathering of gas, and forbidding restriction on end use of gas.

The amendments cite that a calculated value based on a natural gas company's investment in properties and facilities should by definite language be excluded from consideration in rate cases.

Also cited in the proposed amendments was that sale of gas for resale, in view of recent decisions, should be limited by redefinition, to such sales as are made after the interstate transportation is completed.

The brief, prepared by Wesley E. Disney, the committee's general counsel, and Don C. Culton, pointed out that speedy determination and designation of service areas would lighten the load of administrative work on the Commission, enable it to expedite its handling of certificate and rate cases, and in general to keep its docket up to date.

Aviation Gas Demand

Aviation gasoline sales will double in the next two years and will be three times present sales by 1950, James H. Doolittle, vice president and director of Shell Union Oil Corporation, declared last week in Houston where was dedicated a new catalytic cracking unit at Shell's refinery.

Safford Named Secretary Of Equipment Suppliers

H. R. Safford, Jr., recently discharged with the rank of major after serving four years in the Ordnance Department, has been appointed executive secretary of the Petreloum Equipment Suppliers Association, with headquarters at Houston. A graduate in mechanical and electrical engineering from Yale University, he has studied at the Colorado School of Mines and since has had extensive experience in engineering, industrial advertising and public relations. He was engaged in selling, installing and servicing diesel, diesel electric and allied machinery in South America.

H. R. Safford, Jr.

As PESA executive secretary, his duties will include the coordination of the activities and interests of the Association, serving as liaison between the various committees and committee members, making arrangements for annual and regional meetings, etc.

Joins Texas A. & M.

Dr. William L. Russell, research geologist for Stanolind Oil and Gas Company of Tulsa, has been added to the teaching staff of the Texas A. & M. College geology department, according to Prof. S. A. Lynch, department head.

THE OIL MAN'S CALENDAR

OCT. 17–18	Texas Mid-Continent Oil and Gas Association, Houston, Rice Hotel.
24–25	AIME, Petroleum Division, Annual Meeting, Los Angeles, Ambassador Hotel.
24–25	American Association of Petroleum Geologists, Mid-Year Meeting, Biloxi, Miss., Buena Vista Hotel.
28–30	Independent Petroleum Association of America, Annual Meeting, Fort Worth.
NOV. 1– 2	Annual Secondary Recovery Conference, Pennsylvania State College, State College, Pa.
4	Mississippi-Alabama Mid-Continent Oil & Gas Association, Jackson, Miss.
11–14	American Petroleum Institute, Annual Meeting, Chicago, Stevens Hotel.
21–23	Rocky Mountain Oil and Gas Association, Annual Meeting, Denver, Shirley-Savoy Hotel.
22	Independent Natural Gas Association, Annual Meeting, Fort Worth, Blackstone Hotel.
DEC. 4	New Mexico Oil & Gas Association, Annual Meeting, Artesia.
9–11	Interstate Oil Compact Commission, Quarterly Meet, Dallas. Adolphus Hotel.

Nomads Chapter monthly meetings: LOS ANGELES, second Wednesday, Mayfair Hotel. Houston, second Monday, Ye Olde College Inn. NEW YORK, first Monday, Louis Sherry's. TULSA, third Wednesday, Hotel Tulsa. DALLAS, date not yet fixed.

Petroleum Mechanical Engineering Problems Aired at ASME Conference

More than 400 engineers attended the 1946 annual fall conference on Petroleum Mechanical Engineering, American Association of Mechanical Engineers, in Tulsa last week. D. Robert Yarnall, national president of ASME, spoke on "Engineers and Human Affairs" and papers were presented on oil conditioning, drilling, pipe line pumping, construction materials and refinery equipment.

Senator E. H. Moore, of Oklahoma, spoke on "Operation Under Free Enterprise Has Made Our Mechanical Development Superior to Any Other Country" at the banquet.

Some of the papers presented were: J. R. Yancey, A-1 Bit & Tool Company, Houston, described sidewall coring by the rotary method. This operation is performed using a floating whipstock carried by the drill pipe and a core barrel that passes down through the drill pipe and deflected into the side wall of the well bore by the whipstock. Torque is transmitted to the core cutter by the drill pipe. Feed is controlled by hydraulic pressure. The core barrel and cutter are retrieved with a wire line overshot.

Directional Drilling

Kenneth Eilers, U. S. Bureau of Mines, Bartlesville, Okla., spoke on "Significance of Fluid Properties in Gas-Condensate Reservoir Engineering," discussing typical problems, not so much with the purpose of review as to indicate what next step can be taken in increasing engineering knowledge of reservoir fluids and applying that knowledge to the development of more efficient recovery methods. Problems discussed involved pressure maintenance by gas cycling and those characteristic of straight production.

A successful method of reclaiming weighted rotary mud by centrifugal separation was described by A. E. Zimmerman, Merco Centrifugal Company, San Francisco Calif. The centrifuge discussed is characterized by its ability to operate with a continuous feed and a continuous discharge of separated products and was first applied in rotary drilling for extracting sand and cuttings from drilling mud.

In a paper entitled: "Controlled Directional Drilling of Wells," G. L. Kothny, vice president, Sperry-Sun Well Surveying Company of Philadelphia, pointed out that controlled directional drilling has made available many reservoirs of crude which otherwise would have remained nonrecoverable. It has also been of great economic value as it has reduced drilling costs by pointing a more direct route to the oil sand and that important future uses for procuring further production from existing wells and the discovery and development of new sands are indicated.

The critical examination of the operation of present drilling equipment suggests many possibilities for fundamental improvements that would result in decreased deep drilling costs, Douglas Ragland, Humble Oil & Refining Company, Houston, declared. He suggested substitution of automatic or semiautomatic power-operated machinery for manually-operated devices, complete elimination of sand from drilling fluid, development of drilling fluids that will not cause hole enlargement, inexpensive and thoroughly reliable equipment for formation evaluation, and an acid-proof oilwell cement having low resistance to perforation and the ability to set up and form an impermeable seal between the casing and the formation when thoroughly contaminated with drilling fluid.

G. C. MacDonald, Gulf Oil Corporation, Tulsa, discussing "Mid-Continent Mud Conditions," urged that drilling crews in the Mid-Continent area be given the benefit of operator-contractor coordination in over-all drilling operations, especially in drilling mud problems since the average mud expenditure in the Mid-Continent area does not warrant employment of a full-time mud engineer as in the case in the Gulf Coast. MacDonald pointed out that detailed mud analysis is not possible with the equipment and personnel at the average Mid-Continent rig although mud conditioning must be performed there as well as in other and deeper areas.

Discussing "Rotary Pumps in Oil Field Service," R. J. S. Pigott, Gulf Research & Development Company, pointed out that seven general designs are in use. He compared them on the basis of pressure, capacity, cost, operating speed, durability and viscosity range. He also commented on the application of rotary pumps to gathering line service, transfer and bulk station work, refineries, gasoline dispensing and lubricating oil systems.

Pump Cavitation

B. R. Walsh, of Gulf Research, cited remedies for cavitation with reference to reduction of pump entry losses, increase of pump inlet pressure and elimination of entrained air in a paper dealing with "Pump Cavitation." He discussed components of pressure drop in the inlet side of various types of pumps and test methods for determining pump inlet losses were described.

Better geometry for the pumper structure in order to reduce shock loads of pumping wells was recommended by E. M. Fetzer, Continental Supply Company, Dallas, who discussed trends in surface pumping equipment design. He pointed out that shock loads will always be present in varying degrees but that adverse effects can be reduced by providing a better geometry for the pumper structure and sufficient stability or rigidity in the assembly consistent with the best possible adjustment of the equipment to operating conditions. Such a proposal is now before the Committee on Standardization of Pumping Equipment of the American Petroleum Institute.

The selection of pumping equipment is an engineering problem and all factors including reservoir performance should be analyzed before equipment is selected, J. F. Field, Sohio Petroleum Company, Oklahoma City, declared in an address entitled: "Factors Influencing the Selection of Equipment for Artificial Lift." He said the engineering analysis should include an investigation of the advantages and disadvantages of each method of operation. It should include the amount of initial investment and cost of operation over the life of the pool. He declared that the correct selection of sub-surface equipment for sucker rod pumping has a decided effect on operating expense.

M. E. Holmberg and F. A. Prange, Phillips Petroleum Company, Bartlesville, in a paper entitled: "Some Notes On the Use of Free Machining Steels in Connection With Petroleum Equipment," discussed numerous failures caused by shock, stress concentration, fatigue, corrosion, welding and high temperatures.

Department Seems Cooled On "Mother Hubbard" Suit

The Department of Justice, due to report to the District of Columbia tomorrow in the "Mother Hubbard" suit, is expected to ask for a 60-day extension of time in which to file answers to the involved interrogatories of Sun Oil Company. It is not anticipated that the department will have its answer ready for filing at the end of that time, which will be used, rather, to consider how the problem shall be met.

A spokesman for the department said that should the extension be granted it would not close the doors to the later filing of an objection to Sun's demand for a minutely detailed description of the government's allegations against the company.

Enthusiasm over the case has cooled off materially in the department, and no effort is being made to speed up action.

OPA Oil Interpretation

Exemption of petroleum products from price control will depend on whether they are chiefly made within or without the petroleum industry, it is held by OPA. In an interpretation of the new Price Control Act, written by Richard H. Field, OPA general counsel, the raw materials of the petroleum and natural gas industries are conceded to have been given a blanket exemption from price control in the new law.

Products such as gasoline, kerosine, naphthas, fuel oils, greases, lubricating oils, waxes, petrolatums, asphalt and road oil (derived solely from crude petroleum) and natural or petroleum gas are thus exempt from price control, whereas products such as isopropyl alcohol, isopropyl acetate, carbon black briquets, asphalt insulating and sound deadening compunds and wax emulsions are not exempt.

AGA Hopes for Natural Gas Act Clarification; Reserve Estimated

The natural gas industry is hopeful that the Federal Power Commission has been convinced of some of its inconsistencies and that clarification of the Natural Gas Act and clear demarcation of the commission's jurisdiction may result, R. H. Hargrove, incoming president of the American Gas Association told delegates to the AGA convention last week in Atlantic City, N. J.

With the great expansion of the natural gas industry just ahead, the jurisdictional problem is vital, Hargrove, vice president of United Gas Pipe Line Company, said, adding that the industry has projects under way or approved calling for an expenditure of $190 million, and involving 3840 miles of pipe line.

Meantime, J. A. Krug, Secretary of the Interior, told the delegates that a new field has been opened for the use of natural gas in diesel engines by recent tests demonstrating its feasibility for slightly modified equipment.

Krug predicted use of natural gas would permit "substantial savings" in the operation of diesel power plants. He also urged the industry to halt the waste of natural gas, citing that in 1943, 680 billion cubic feet of gas were lost, equal to the loss of 26 million tons of soft coal.

Amendments to the Natural Gas Act to make it conform to the "original intent" of the 1938 Congress which passed the bill was called for by Charles I. Francis, Houston attorney. Francis told the delegates that "it was never thought" that the language of the act should be interpreted to authorize federal control of any phase of conservation, production, gathering or sale of gas.

Recent court decisions, he added, confirmed the FPC's jurisdiction in an area thought to be subject only to state authority.

E. V. Murphree, executive vice president of Standard Oil Development Company, said that due to the utilization of certain principles developed in the fluid catalytic cracking process, conversion of natural gas into gasoline is now economically competitive with production of gasoline from petroleum.

He declared that production of gasoline from coal is also practical but not now, in general, competitive with production from crude oil. Development of coal conversion processes is continuing, he said. In his opinion no company or industry today can get along without research and development, for "over a period of time it would stagnate and lose a major portion of its trade to more farsighted competitors." This, he said, was particularly true in the highly competitive oil industry.

A seven-point program for harmonious employe relationships was outlined by C. B. Boulet, director of personnel of the Wisconsin Public Service Corporation. His recommendations included making sure supervisory personnel properly interprets the policies of top management.

Proved recoverable natural gas reserves in the United States, as of December 31, 1945, were estimated at approximately 148 trillion cubic feet in a report by the committee on natural gas reserves.

The committee, headed by N. C. McGowen, president, United Gas Company, pointed out that reserves are found in three types of occurrence—non-associated gas (free gas not in contact with crude oil in the reservoir), 111 trillion cubic feet; associated gas (free gas in immediate contact with crude oil in the reservoir), 20 trillion cubic feet, and dissolved gas (gas in solution in crude oil in the reservoir), 17 trillion cubic feet.

Recovery factors and abandonment conditions assumed in the individual fields differ as widely as the characteristic circumstances in each field, the committee said.

Texas, with an estimated reserve of slightly more than 78 trillion cubic feet, paced the nation. Louisiana's almost 20 trillion cubic feet was second, and Kansas, 13 trillion cubic feet, third. All are shown in the accompanying table.

The committee expects to investigate the natural gas and natural gas liquid reserves as of December 31, of each year and to report these figures early in the following year. Annual production figures will be included. The estimates will be made in cooperation with the API committee on petroleum reserves and will be published concurrently therewith.

Members of the committee, other than McGowen, include: Lyon F. Terry, Chase National Bank, vice chairman; Perry Olcott, Humble Oil & Refining Company; R. W. Bauer, Southern California Gas Company; E. E. Roth, Columbia Gas & Electric Corporation; R. O. Garrett, Arkansas Louisiana Gas Company; F. S. Lott, U. S. Bureau of Mines; W. T. Nightingale, Mountain Fuel Supply Company; Charles C. Hoffman, Cities Service Gas Company; and Walter E. Caine, chief statistician, American Gas Association, secretary.

AGA Officers

R. H. Hargrove of Shreveport, vice president of United Gas Pipe Line Company, was elected president of American Gas Association at its 28th annual convention held in Atlantic City last week.

R. H. Hargrove

Other officers elected included: Hudson W. Reed, president of Philadelphia Gas Works Company, first vice president; Robert W. Hendee, Colorado Interstate Gas Company, second vice president; and Edward J. Barrett, president of Long Island Lighting Company, Mineola, N. Y., treasurer.

Estimated Proved Recoverable Natural Gas Reserves in the United States
As of December 31, 1945
(In Millions of Cubic Feet)

STATES	Non-Associated[1]	Associated[2]	Dissolved[3]	Total
Alabama	.....	.....	23	23
Arkansas	494,866	149,471	225,349	869,686
California	3,653,704	3,091,952	4,110,051	10,855,707
Colorado	158,422	126,783	111,077	396,282
Florida	.....	.....	6	6
Illinois	3,000	55,000	210,000	268,000
Indiana	4,000	8,000	5,000	17,000
Kansas	12,825,868	218,984	205,753	13,250,605
Kentucky	1,336,800	.....	100,000	1,436,800
Louisiana	16,043,932	2,650,000	1,154,600	19,849,393
Michigan	5,431	.....	3,500	8,931
Mississinpi	1,621,382	270,332	116,145	2,017,859
Missouri	10	.....	60	70
Montana	1,202,521	.....	.....	1,202,521
Nebraska	.....	.....	375	375
New Mexico	2,680,133	1,930,300	579,876	5,190,309
New York	75,000	.....	1,000	76,000
Ohio	581,800	.....	45,000	626,800
Oklahoma	7,716,351	1,138,767	1,224,820	10,079,938
Pennsylvania	465,000	.....	55,000	520,000
Texas	59,381,205	10,316,402	8,609,069	78,306,676
Utah	81,323	.....	.....	81,323
West Virginia	1,818,300	.....	110,000	1,928,300
Wyoming	565,306	164,507	86,950	816,763
Total	110,714,354	20,121,359	16,953,654	147,789,367

Notes: Volumes are reported at a pressure base of 14.65 pounds per square inch, absolute, and at a standard temperature of 60° F.

[1] "Non-Associated" includes all free gas not in contact with crude oil in the reservoir.

[2] "Associated" includes all free gas in immediate contact with crude oil in the reservoir.

[3] "Dissolved" includes all gas in solution in crude oil in the reservoir. The estimates for this gas were based on the figures of the API Committee on Petroleum Reserves and were estimated jointly by the AGA and the API reserves committees.

Bonuses Being Reported Paid for East Texas Crude

The market demand for crude reserves in the East Texas field continues to improve, with recent sales reflecting this situation through an advance in per-well prices in the thick-sand sector. A new trend is the eagerness of some companies to purchase minority undivided lease interests without the privilege of buying the oil.

The payment of premiums in the form of enlarged field gathering charges has been growing for some weeks. Five and 10 cent bonuses per barrel have been reported frequently, while a new but substantial purchaser in the field is credited with having raised the ante to 15 cents in order to fill its deficit on sweet crude. Some purchasers have introduced a plan of financing and installing lease gathering systems on independent leases in order to obtain connections. The cost of the installation is retired from a portion of the field-gathering fee allowed by the purchaser.

Purchasers on Defense

The turnover in lease connections has been brisk for some months due to property sales and the granting of extra gathering fees. This has placed all purchasers on the defense, and none is voluntarily surrendering a single well connection.

An independent refinery is credited with having negotiated a contract whereby it will obtain field gatherings totaling 2260 barrels daily from a small pipe line concern that has been selling to a major since 1937. This switch in connections is to become effective November 1.

Upward readjustment of the price posting on the 38-40-gravity Woodbine oil produced in East Texas from the current quotation of $1.60 per barrel is a foregone conclusion. This crude is more readily adapted and affords a proportionate profit on refinery yield greater than any other crude now available in large quantities. An adverse price differential applied to the East Texas field as compared to popular crudes along the Gulf Coast and Southwest Texas became established when the giant field gained its first trunk line outlet in 1931. The original East Texas field pipe line tariffs were 10 cents per barrel for gathering and 22½ cents per barrel trunk line rate to the coast. These rates have since been reduced at intervals whereby all carriers have a uniform tariff of 5 cents gathering and 7½ cents trunk line tariff. The current field price posting is identical with the top posting of other fields that have an 18-cent trunk line tariff in reaching coastal refineries and tanker terminals.

Stanolind Is Active

Stanolind Oil & Gas Company is credited with having paid $680,000 cash for G. E. and J. L. Sullivan's undivided one-fourth working interest in Licey Petroleum Company's Fisher 14-well lease and the Kinsell 6-well lease, both in Gregg County. Another deal between the same participants involved cash payment of $324,545 for undivided one-fourth interest in the Ralph E. Fair et al's B. F. Maxwell 21-well lease and the B. K. Maxwell 1-well lease both in Rusk County; one-third interest in the Rowe-Maxwell 5-well lease, Rusk County for $93,636; and one-half interest in the J. M. Shaw 1-well lease, Rusk County, for $4545.

Stanolind is credited with paying $100,000 per well basis in acquiring R. A. Young's undivided one-half lease interest in McAlester Fuel Company's C. E. Christian 5-well lease and the Lemaire 5-well lease, both in Gregg County.

Crude Production for Year May Set New High, Bureau of Mines Discloses

Domestic crude oil production this year may hit a new record high of as much as 1724 million barrels and be supplemented by imports of 86 million barrels to meet an estimated total demand of 1810 million barrels, it was forecast last week by the Bureau of Mines.

Total crude runs to stills for the year may reach 1732 million barrels, and exports of crude may amount to 38 million barrels, with transfers to fuel oil and losses accounting for another 40 million barrels, the bureau said.

The bureau's estimates were based on actual domestic production of 412.3 million barrels in the first quarter and 435.4 million barrels in the second quarter, and a foreseen production of 447 million barrels during the third and 437 million barrels during the current quarters.

Demand for domestic crude this month will average 4,771,000 barrels daily, a drop of 19,000 barrels from the September estimate but 557,200 barrels above the 4,213,800 barrels daily actual demand in October, 1945, it was forecast.

Production Drop Explained

The drop in required production, seen as running through the remainder of the year, is based on the fact that during the past six months the consumption has exceeded the bureau's forecasts by about 100,000 barrels daily, this differential being primarily reflected in an abnormal seasonal increase in refined stocks. Current data indicate that in the past two quarters stocks of distillate fuel oil increased by 30 million barrels, residual fuel oil by 19 million barrels and kerosine by 12 million barrels, while stocks of finished gasoline declined at a fairly normal rate of 18 million barrels.

"In view of the large increments in refined stocks, particularly in the third quarter," it was explained, "the Bureau of Mines' forecast of the probable demand for domestic crude oil in the fourth quarter is approximately 4,720,000 barrels daily with total runs to stills of foreign and domestic crude oil of about 4,750,000 barrels daily."

Motor Fuel Estimates

The bureau reported that actual motor fuel demand amounted to 171.4 million barrels in the first quarter and 201.4 million barrels in the second quarter, while current data indicate a third quarter demand of 209 million barrels and fourth quarter requirements are estimated at 186 million barrels. Estimated total demand for the year is 768 million barrels, representing exports of 47 million barrels, military purchases of 17 million barrels and civilian demand in the continental United States of 704 million barrels.

The total demand for all oils amounted to 473 million barrels in the first quarter, rose to 480.9 million barrels in the second quarter, is estimated at 480 million barrels in the third quarter and forecast at about 505 million barrels in the final quarter.

For October only Colorado was increased—from 31,000 to 32,000 barrels daily. Cutbacks were as follows: California, to 850,000 barrels from 855,000 barrels; Oklahoma, 384,000 from 386,000 barrels; Louisiana, 383,000 from 384,000 barrels; Wyoming, 100,000 from 108,000 barrels; Arkansas, 77,000 from 78,000 barrels; Mississippi, 60,000 from 61,000 barrels; Kentucky, 30,000 from 31,000 barrels; New York, 13,200 from 14,000 barrels, and "other," 2000 from 2200 barrels.

The forecast left unchanged production in Texas 2,120,000 barrels; Kansas, 264,000 barrels; Illinois, 214,000 barrels; New Mexico, 100,000 barrels; Michigan, 47,000 barrels; Pennsylvania, 35,000 barrels; Montana, 24,000 barrels; Indiana, 19,000 barrels; West Virginia, 8400 barrels; Ohio, 7600 barrels, and Nebraska, 800 barrels.

Crude Oil Production in the United States

(Estimates compiled by THE OIL WEEKLY. All figures indicate daily averages in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED October 12	October 5
Alabama	1,000	1,000
Arkansas	73,550	75,300
California	872,400	868,700
Colorado	38,000	40,750
Florida	*	15
Illinois	206,900	205,900
Indiana	18,950	18,750
Kansas	271,300	267,300
Kentucky	31,000	31,100
Louisiana	394,000	392,000
North Louisiana	89,100	87,100
South Louisiana	304,900	304,900
Michigan	46,700	47,300
Mississippi	74,450	74,300
Missouri	100	100
Montana	23,900	24,450
Nebraska	700	700
New Mexico	99,750	99,750
New York	14,200	14,200
Ohio	8,250	8,000
Oklahoma	352,650	355,350
Pennsylvania	37,400	37,300
Tennessee	35	35
Texas	2,064,300	2,064,300
Tex. R. R. Comm. Districts:		
Dist. 1—S. Central	19,425	19,425
Dist. 2—Lower Gulf Coast	146,400	146,400
Dist. 3—Upper Gulf Coast	455,900	455,900
Dist. 4—S. West	216,700	216,700
Dist. 5—E. Central	40,300	40,300
Dist. 6—E. Texas Field	320,300	320,300
Dist. 6—Rest of N. East	102,900	102,900
Dist. 7-B—W. Central	33,225	33,225
Dist. 7-C—West	27,300	27,300
Dist. 8—West	487,500	487,500
Dist. 9—N. Central	129,400	129,400
Dist. 10—Panhandle	84,950	84,950
West Virginia	7,600	8,700
Wyoming	108,000	108,750
Total United States	4,745,135	4,743,550

* Wells shut-in.

Total stocks, foreign and domestic October 5, as reported by the Bureau of Mines were 221,782,000 barrels.

Interstate's New Line Greatly Increases Runs

Interstate Oil Pipe Line Company is starting operations on its 34-mile 8-inch extension from the Holley Ridge field station, Mississippi, to the Delhi field, Louisiana. This line has a capacity of 30,000 barrels daily, and approximately 6000 barrels of daily runs are assured through connections obtained from American Liberty Oil Company, Gulf Refining Company and others. Interstate has been moving 20,000 barrels daily from Mississippi fields, and the new connection will afford a substantial gain in runs.

Finishing touches are being placed on Interstate's 16 mile combination 4 and 6-inch extension from the Fayette field to connect with its booster station at Cranfield field, Mississippi.

Cotton County Pipe Line Capacity to Be Increased

Stanolind Pipe Line Company, of Tulsa, has started work replacing a 4-inch gathering line into the Cache Creek oil field of Cotton County, with a new 6-inch line, to handle increased production in the field. The company also is assembling pipe for future extensions.

There are 91 completions in the county for an average of 5427 barrels of oil a day, with 75 of these wells being in the Cache Creek field, producing 4950 barrels of oil a day. Sixteen are at the Essaquanahdale pool, opened by the Bridwell Oil Company, producing approximately 477 barrels of oil a day.

New Compressors Asked

Panhandle Eastern Pipe Line Company, Kansas City, Mo., and Chicago, has filed application with the Federal Power Commission for authorization to install eight additional compressor units aggregating 12,200 horsepower in eight of the compressor stations along the company's gas pipe line system which extends through Texas, Kansas, Missouri, Illinois, Indiana, Ohio and Michigan. Estimated cost is $2,685,000. Additional units are claimed needed for substitution when existing units require periodic repair and overhauling.

To Acquire Companies

FPC has authorized United Fuel Gas Company to acquire and operate properties and other assets of Huntington Development and Gas Company and Warfield Natural Gas Company. The companies' home offices are in Charleston, W. Va., and are subsidiaries of Columbia Gas & Electric Corporation.

Lakes Line Opens

Great Lakes Pipe Line Company's system north of Sioux Falls, South Dakota, through Marshall, Minnesota, to Watertown, S. D., has been completed and placed in operation.

The line comprises 78 miles of 8-inch between Sioux Falls and Marsall, and 72 miles of 6-inch between Marshall and Watertown. Initial deliveries from the line are expected to be made at Watertown into tank cars October 14, with deliveries into trucks a week or 10 days later. For the first few weeks tonnage into Watertown will be confined to gasoline but it is expected that distillants may be handled there beginning in December.

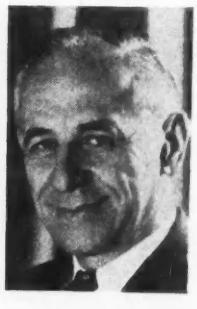
Extension Is Completed for Cooke County System

Sinclair Refining Company, pipe line division, has placed in operation a 5-mile, 4-inch extension of its Cooke County, Texas, system from the Wilson field to the Woodbine field, where connection was given 750 barrels of daily allowable. The company acquired Northern Ordnance, Inc.'s Woodbine field gathering system that was dependent upon tank car shipments for market outlet.

Vaughn and Taylor Construction Company, Wichita Falls, built the extension.

Smith Gets Merit Medal For Portable Pipeline

Sydney S. Smith, manager of the products pipe line department of Shell Oil Company, Inc., New York, received the Medal for Merit, United States government's highest civilian award, at a dinner October 7 at Tulsa. The medal was for "giving unstintingly of his time and experiences in assisting the government in designing, perfecting and proving portable military pipe line equipment."



Sydney S. Smith

Smith has been with Shell Oil Company since 1924, when he became office manager of the company's natural gasoline division at Tulsa. He assumed his present position on January 1, 1938.

Hope Requests New Line To Serve West Virginia

Hope Natural Gas Company has applied to FPC for authority to build 58 miles of 20-inch loop line and install additional compressors in stations in West Virginia to enable it to transport 29,000 Mcf daily of natural gas out of the Wyoming County gas fields in addition to the 42,000 Mcf now being moved, at an estimated cost of $4,600,000.

Gwinville Line Progresses

The 16-inch, 80-mile pipeline which will tie the Gwinville field in Mississippi to the Pickens terminal loading station is nearly one-third completed. Twenty-five miles have been finished. Latex Construction Company of Houston is constructing the line for the Southern Natural Gas Company. G. T. Derkins & Associates are the engineers.

Toronto Pipe Line Buys Old North Texas System

Toronto Pipe Line Company, subsidiary of British-American Oil Producing Company, has purchased Bell Oil and Gas Company's gathering system in the old Petrolia shallow field, Clay County, Texas, consisting of about 100 miles of 2-inch and 15 miles of 4-inch lines.

This is the oldest system in North Texas, having been originally built by the Texas Company, and currently serves 280 stripper wells that yield 145 barrels of oil daily. Toronto will route its gatherings through The Texas Pipe Line Company to Henrietta, thence via tank cars to British-American's Moose Jaw, Canada, refinery.

Natural Gasoline Group Holds California Meeting

The demand for liquefied petroleum gas products in California is expected to increase approximately 50 percent by 1950, two of the state's top-ranking analysts, Hugh F. Colvin, consulting engineer and C. D. Gard, Union Oil Company told the California Natural Gasoline Association in Los Angeles last week.

Their paper was a report on the promise which the LPG market holds as a profitable outlet for the natural gas processor's surplus butanes and for propane. Propane is expected to dominate the LPG field during the next few years.

"Fat Oil De-Ethanization," presented by A. M. Whistler of C. F. Braun and Company, was a discussion of the advantages and limitations of this new method to increase propane recovery from 50 to 100 percent.

M. W. Kibre, General Petroleum Corporation, and association president, gave a discussion of the accomplishments of the CNGA's committees and the aims and plans of the association.

"Tentative partial Enthalpies of the Lighter Hydrocarbons" was given by Drs. B. H. Sage and W. N. Lacey, professors of chemistry, and Robert H. Olds, research fellow, California Institute of Technology.

R. C. Alden, director of research, Phillips Petroleum Campany, said that German developments in the conversion of coke and brown coal to liquid hydrocarbons, if applied to natural gas, would result in a cost of motor fuel of about 19 cents per gallon. A number of developments in the several processes, however, including cheap oxygen, large bed reactors, improved catalysts, and fluidized catalytic operations will probably reduce the cost to as low as five cents per gallon, he said. These together with the large scale of American operations have already resulted in preliminary construction work on two commercial installations (Brownsville, Texas, and Western Kansas) and several other installations where natural gas reserves and other conditions are favorable are anticipated.

"Evaluation of Absorber Operating Efficiency" was given by G. Ragatz and J. A. Richardson, Bechtel Bros.-McCone Company.

Baash-Ross News

BAASH-ROSS TOOL COMPANY · LOS ANGELES · HOUSTON · NEW YORK

OUR 26th YEAR

HERE'S A TOOL WITH A-

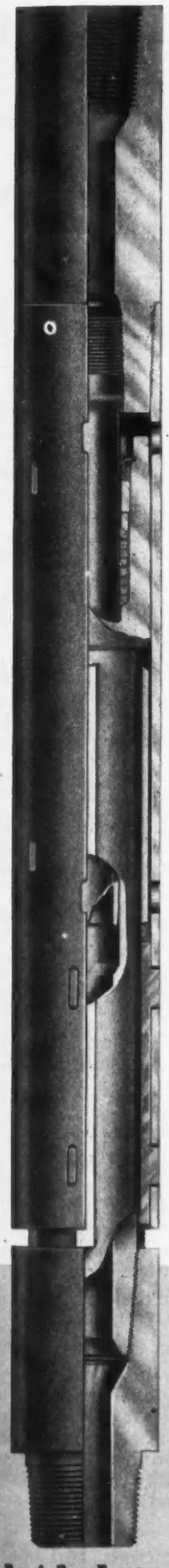
2-Way Saving

1 Safeguards the drill string against sticking

2 Increases drilling efficiency

The BAASH-ROSS DRILLING TYPE BUMPER SUB

WHEN YOU put a Baash-Ross Drilling Type Bumper Sub on your drill string you're installing one of the best safeguards yet developed against costly fishing jobs. For the Baash-Ross Drilling Type Bumper Sub is specially designed with the necessary ruggedness and engineering features to withstand the continuous vibration and severe torque load of modern high-speed drilling operations. A particularly important design feature is its renewable spline inserts that take all of the wear. You can renew this Bumper Sub after long periods of use by simply replacing the spline inserts—a simple and inexpensive operation.



Baash-Ross Bumper Sub—Drilling Type.

SPLIT-SECOND ACTION

Renewable spline inserts are just one of several features that make the Baash-Ross Drilling Type Bumper Sub unique and permit it to be used continuously *right in the drill string* with negligible maintenance and attention. Whenever you're drilling in heaving, sticky or difficult formations, install the Bumper Sub directly above the reamer, the bit or other large-diameter sections that are apt to get stuck. Should the drill string stick, you can *instantly* start jarring to loosen it. You can jar *up*... or you can jar *down*. Or you can even alternate up and down jarring, if desired, without making any adjustment whatever in the tool. In addition, you can instantly control the force of the blow—heavy or light—to meet any requirement.

By having a tool *right in the drill string* with which to jar the pipe loose the instant it sticks, one of the major causes of costly fishing jobs is eliminated. The time to loosen stuck pipe is the moment it sticks—not after cuttings have had a chance to settle and wedge the string tightly in place. The Baash-Ross Drilling Type Bumper Sub gives you this split-second safeguard against costly fishing operations.

IMPROVED WEIGHT CONTROL

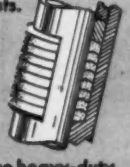
But that is not all. Many operators are also using the Baash-Ross Bumper Sub to increase the efficiency of their drilling operations by installing it as a telescoping "free" joint between the drill collars and drill pipe. Then, by regulating the weight of the drill collars, they can maintain continuous and accurate control on the weight placed on the bit by simply keeping the Bumper Sub joint partly open as they drill. Yet at any time they can immediately increase or decrease the weight on the bit in the normal manner should thin strata of hard or soft formations make such changes advisable.

Regardless of the nature of your drilling operations, you will find the Baash-Ross Drilling Type Bumper Sub an invaluable aid. Get the full details on this tool from your nearby Baash-Ross distributor... or write direct.

Only the Baash-Ross Drilling Type Bumper Sub has all these advantages!

Quickly Renewable Spline Inserts: Replaceable spline inserts take all the wear. After long periods of service, simply replace the spline inserts—a quick and inexpensive operation—and the Bumper Sub is as good as new. Minimizes wear on body and mandrel!

Drives Up or Down: No adjustment is necessary in the tool to jar either upward or downward—or to alternate up or down blows. Also, intensity of blow is instantly variable to meet requirements.



High Pressure Pack-Off: Under even the highest drilling pressures the Baash-Ross Bumper Sub will not leak because of the unique heavy-duty multiple-ring packing element between the body and mandrel. This unit packs off over the full stroke, and may be readily replaced whenever necessary.

16 Inch or 24 Inch Stroke: Take your choice—the Baash-Ross Bumper Sub is available in both 16 inch and 24 inch strokes... or can even be supplied with other length strokes on special order.

Wide Range of Sizes: Available for both API Regular and API Full Hole strings in a complete range of sizes.

International Oil Co-Op Formed, Cowden Secretary

Organization of International Cooperative Petroleum Association, capital of $15 million, to start operations as soon as $500,000 has been subscribed, was perfected in Zurich, Switzerland, with election of a temporary board of directors.

Albin Johanson, Sweden, was named chairman; Howard A. Cowden, president of the Consumers Cooperative Association of Kansas City, secretary; and the following directors: A. J. Cleuet, France; John C. Dissell, South Africa; John M. Davidson, Scotland; and J. Huberas, alternate board member.

The basic plan for the international co-op was developed by Cowden before the war and was a major item of business before the Zurich meeting of representatives of cooperative organizations from many countries, more than a dozen of whom pledged themselves to its support.

The world oil cooperative is expected to begin operations on a brokerage basis as importer and exporter for its member cooperatives, but Cowden's plan envisaged it finally as engaged in production, refining and pipe line and tanker transport on a global basis.

It is expected the headquarters of the association will be located in Sweden, where a National Cooperative Petroleum Federation already operates a terminal storage plant and has an interest in a tanker concern.

Companies Say Russia Refuses Payment for Oil

Four oil companies entirely or partly owned by American interests have reported that Russia owes them $1½ million for petroleum deliveries and has refused to pay them until the firms furnish detailed information on their finances.

The companies, all owning property in Soviet-occupied Eastern Austria, are Vacuum Oil Company and Standard Oil Company of Austria, both owned entirely by American interests, and the Reholgewinnungs Aktiengesselschaft and Austrian Mineraloelwerke, each with 50 percent of their stock held by Americans.

The Russian debt was listed as of August 31, the companies said, and covered deliveries of crude oil and finished products.

Colombian Production Shows Gain for August

Crude oil production in Colombia during August totaled 2,035,534 barrels or at the rate of 65,662 barrels daily. This was 55,273 barrels higher than the 1,092,432 barrels for July when the daily average was 62,202 barrels.

Pacing Colombia's oil production was Tropical Oil Company's DeMares concession where 1,130,915 barrels were produced during August. This was slightly more than one-half of the country's total output for the month and 38,483 barrels above the July flow of 1,092,432 barrels. August production on DeMares by fields was: Infantas, 264,049 barrels; La Cira, 856,274 barrels; Galan, 2330 barrels, and Colorado 8262 barrels.

The Barco concession of Colombiana Petroleum Company produced 578,531 barrels during August, an increase of 11,465 barrels over the 567,066 barrels produced in July.

The Casabe field on the Yondo concession of Cia. Colombiana de Petroleo el Condor produced 325,088 barrels during August or 4325 barrels over July.

On September 1, 1946, there were 18 tests active in Colombia, including field wells and wildcats. Four tests were standing on the same date. The one dry hole was Cia. de Petroleo La Perla de Colombia's San Angel 5, on the San Angel concession, which was abandoned at 3520 feet.

No Sales Reported on Venezuelan Royalty Oil

Bids for the purchase of Venezuelan royalty oil by other than the producing companies appear to have been submitted in response to a call sent out through the Venezuelan Embassy in Washington (THE OIL WEEKLY, August 19), the Minister of Fomento having requested the National Economic Council for an opinion on such sales, the Department of Commerce reports. No sales have been concluded as yet, the report stated.

Crude production in Venezuela reached a new high level in August, averaging 1,086,893 barrels daily up to August 26, it was reported. Output of heavy Lake crudes continued at their highest levels, but production from eastern Venezuelan fields remained about the same as in July.

Deepest in S. A. May Drill Ahead

Venezuelan Oil Concessions Ltd.'s Curazao 2-A, a wildcat well east of the Cabimas field in the Lake Maracaibo oil region, is standing cemented after having reached a depth of 15,136 feet, surpassing by nearly 2000 feet the depth of International's deep well in Ecuador completed early this year. After reaching this depth, carrying 10,941 feet of open hole, decision was made to set protection casing before attempting to go deeper. Details are lacking as to formations at the bottom of the hole, but at a short distance above bottom the well was reported still in the Eocene formations with no encouraging shows. A string of 7⅝-inch extreme line casing was set to 13,240 feet, perhaps the longest casing string of that size on record.

Another interesting test being drilled by the Shell Group in western Venezuela, its West Tarra 1, was drilling near 7900 feet and still going ahead. This well several weeks ago gave assurance of opening a new field from the extremely important Cretaceous Limestone when it flowed at the rate of 2000 barrels of oil during a drill-stem test made after cutting the first 40 feet of the formation.

Colombia's Northernmost Well Now Awaits Tests

Interest in petroleum possibilities of the northern coastal area of Colombia has been boosted by reports of showings in Tubara Oil Company's Tubara 1, the most northerly well drilling in the country. It is standing cemented after drilling to 4445 feet and is setting casing by means of which a series of production tests might be made of sands already cored. However, decision had not been made as to whether or not the well would be drilled deeper before coming back up the hole to do the testing.

Originally scheduled as a deep test—10,000-12,000-foot range—operators may decide to complete at the present depth to establish some production before proceeding with the deeper exploration.

Operated by Tropical Oil Company, the property is located in the Department of Atlantico, and is jointly owned by Tropical and Socony-Vacuum Oil Company of Colombia, and is a lease taken from private interests, not a government concession. The prospect has been regarded favorably for some time, but several attempts to drill have been unsuccessful because of heaving shale. Richmond Petroleum Company once held a concession here and attempted to drill but at the time, research had not made possible penetration of such formations as is the case today.

Unified Development Plan Is Adopted in Trinidad

A comprehensive program of unified development of oil properties in Trinidad has been initiated by three British companies—National Mining Corporation, Ltd., Trinidad Consolidated Oilfields, Ltd., and Premier (Trinidad) Oilfields Limited.

The companies will operate on a plan of unified capitalization and finance with National Mining Corporation, Ltd., as the operating company.

The combined holdings of the three companies comprises an area of 29,813 acres of freehold and leasehold property, located in and adjoining proved oil areas. A majority of this acreage is held by National Mining.

Exploration work is already under way with plans now being made to outline a drilling program.

Students Are Visitors

T. Wojcik of Krakow, Poland, and G. Lucic of Belgrade, Yugoslavia, who hold UNRRA fellowships from their countries to the United States on petroleum production and exploration, were visitors in Houston last week. After inspecting oil field equipment in the Houston area, they will visit California.

Iran Production

Crude oil production of Anglo-Iranian Oil Company, Ltd., in Iran during June amounted to 1,643,000 tons (12,430,938 barrels). Total crude production in the six months ended June 30 was 9,925,000 tons (75,092,550 barrels).

INFLUENCE OF ATOMIC SCIENCE On Petroleum

By R. E. FEARON
Consultant for Well Surveys, Inc.

IN THE YEAR that has elapsed since the dropping of the atomic bomb on Japan, much information has been released, or has become apparent of itself which has a direct bearing on the course which atomic technology will take in influencing the petroleum industry. Much has been written, and much more has been privately talked, to the effect that the advent of atomic energy is the death knell of the petroleum industry. I did not agree with this view at the time I wrote "Oil Uses of the Atom"[1] a year ago. I am even less inclined to take such an attitude now. To attempt to settle such a controversy is outside the scope of this article and would furnish quite enough material for an article devoted entirely to that subject. I shall, nevertheless, enumerate a few of the factors which militate against atomic energy superseding liquid fuels in the majority of small prime movers. These are:

1. Atomic energy sources are *always* sources of dangerous radiations. Even sources which nominally do not emit penetrating rays will be found to do so if enough to run an engine is employed.
2. Atomic energy sources present a tremendous hazard of contamination, and possible ingestion, of unbelievably poisonous substances which the general public is not, and will not be, able to cope with.
3. Except for chain reaction plants atomic energy sources liberate their energy continuously, and this energy must be dissipated effectively and continuously, or there will be trouble. Energy not used (during down times) is wasted.
4. Chain reaction piles have severe shielding (or distance) requirements for human safety. There is no likelihood of this difficulty being solved at an early moment. Approximately ten feet of concrete are needed to effectively protect personnel from a chain reaction pile.

Passing by the above controversy, this article will be devoted to the constructive things which atomic technology has in store for the oil industry. Most of the ideas discussed in this article are already being applied, and will progress largely through receiving more general application, and through being further perfected. All will profit from the greater availability of the manifold kinds of radioactive substances which the atomic age brings to the oil industry, and, indeed, to all of industry. I shall not neglect, also, to speculate somewhat on the course the atomic future oil industry will take in fields that are as yet untrodden, and are only dimly seen afar off.

Agencies of Atomic Science

Atomic science concerns itself fundamentally with matter, and with energy. The technology that springs from this science differs from other technology in the same measure that the transformations of matter and energy are different from those studied in other technologies.

Inside the Hortonsphere shown here is a compressed atmosphere at the center of which is an electrode charged to millions of volts. Charged atoms are produced in the neighborhood of the electrode, whereby they are repelled through the vacuous space in the tube where they are introduced. When the charged atoms arrive at the other end of the tube, situated at the bottom of the Hortonsphere, they have enough energy to effectively "smash" atoms, transforming them into other and different atoms. (Courtesy Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pennsylvania.)

An element, as originally conceived, was a fundamentally indestructible kind of matter, one not capable of being further reduced into simpler substances. Moreover, as originally conceived, elements were formless, each being made up of a continuum of infinitely subdivisible matter.

With the advent of John Dalton, and thereafter, elements came to be conceived as consisting of non-subdivisible and individually identical fragments called atoms. In this view, an element was a substance consisting entirely of the same kind of atoms. Atoms themselves were considered to be indestructible, and incapable of being changed into other kinds of atoms. While it is true that, in the age of atomic science, we do deny fundamentally the immutability of the atom, it nevertheless remains a fact that the things which early workers believed to be entirely impossible do remain very difficult to do with terrestrially available means. The bullets required to smash atoms either must be debris of other atoms, or must be travelling at many thousands of miles per second.

Belittling The Atom

Atoms had no sooner been agreed upon as the fundamental particles of nature than many scientists and natural

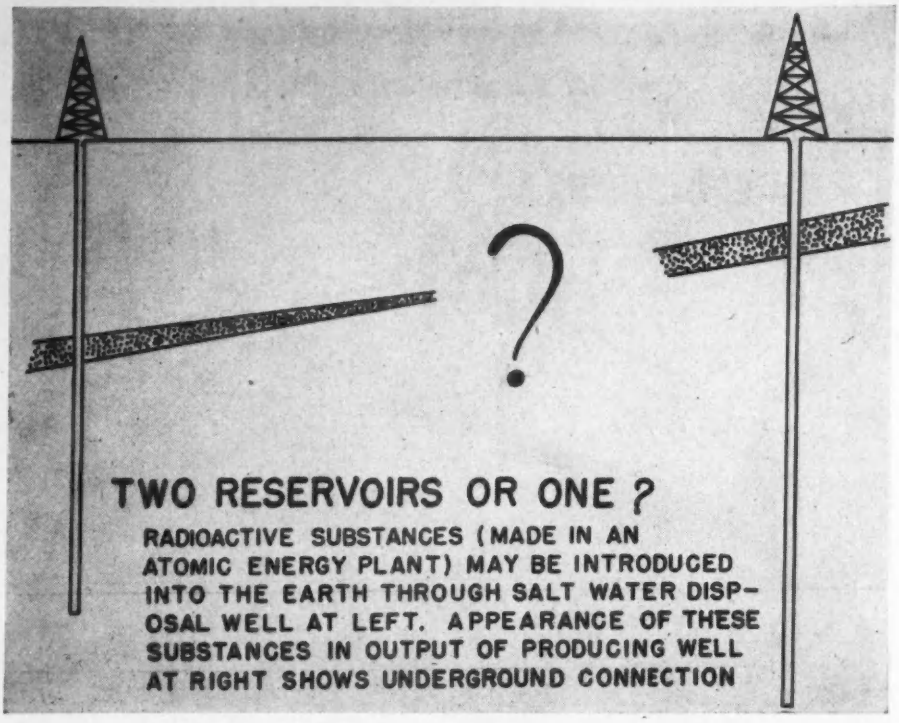

TWO RESERVOIRS OR ONE ?
RADIOACTIVE SUBSTANCES (MADE IN AN ATOMIC ENERGY PLANT) MAY BE INTRODUCED INTO THE EARTH THROUGH SALT WATER DISPOSAL WELL AT LEFT. APPEARANCE OF THESE SUBSTANCES IN OUTPUT OF PRODUCING WELL AT RIGHT SHOWS UNDERGROUND CONNECTION

Figure 1. In this diagram is shown a typical continuity problem, where artificial radioactive substances from facilities of atomic technology may be useful to show connectedness of underground strata. This diagram is illustrative only; actual problems of the industry will usually be more complicated. Connectedness between members of a many membered sand may be a practical problem. Connectedness between upper sands and bottom water may be studied to show extent of leakage at casing shoe, as another example.

philosophers were at work attempting to discover whether they could possibly be broken up into smaller pieces. One by one the atom yielded its secrets to the world-wide siege which was laid at its door.

The first subatomic particle to be definitely identified was the electron. Electrons were studied by themselves, and in the atoms where they exist. Here an amazing microcosm unfolded itself, which does not lend itself to interpretation through the rudimentary mechanical laws by which we understand the motions of larger bodies. This little universe of electrons, inside the atom, has as its solar pivot a body called a nucleus, properties of which determine the properties of the atomic plantation, on which the electrons are merely peons, held in tow by the power of the owner, the nucleus.

Although Curie early discovered that the nuclei of some atoms, notably those found in pitchblende, had a habit of occasionally erupting with cataclysmic violence, these occasional transformations of the nucleus were for a long time thought to be beyond the power of man to bring about or influence. Lord Ernest Rutherford pushed back this barrier of nature by finding the method and the means to transform nitrogen artificially into other elements. Although Rutherford transformed only a few invisible atoms, and it took some time to be sure that he had, in fact, transformed anything, this marked the beginning of man's habit of transforming atoms into other atoms, a habit that had its culmination in a terrific explosion near Alamagordo, and two over Japan, explosions involving millions of billions of billions of new atoms, made in U. S. A. The transformations of atomic nuclei have revealed a new and small microcosm within the nuclei, different from that other subatomic microcosm outside the nucleus, and consisting of many interesting new kinds of subatomic particles, related together inside the nucleus according to laws which are, as yet, largely undiscovered.

Progress, Which Way?

The search for new knowledge, for smaller particles, and greater sources of energy, goes on apace. Four new elements have been added to the original 92, and it seems likely that more will be

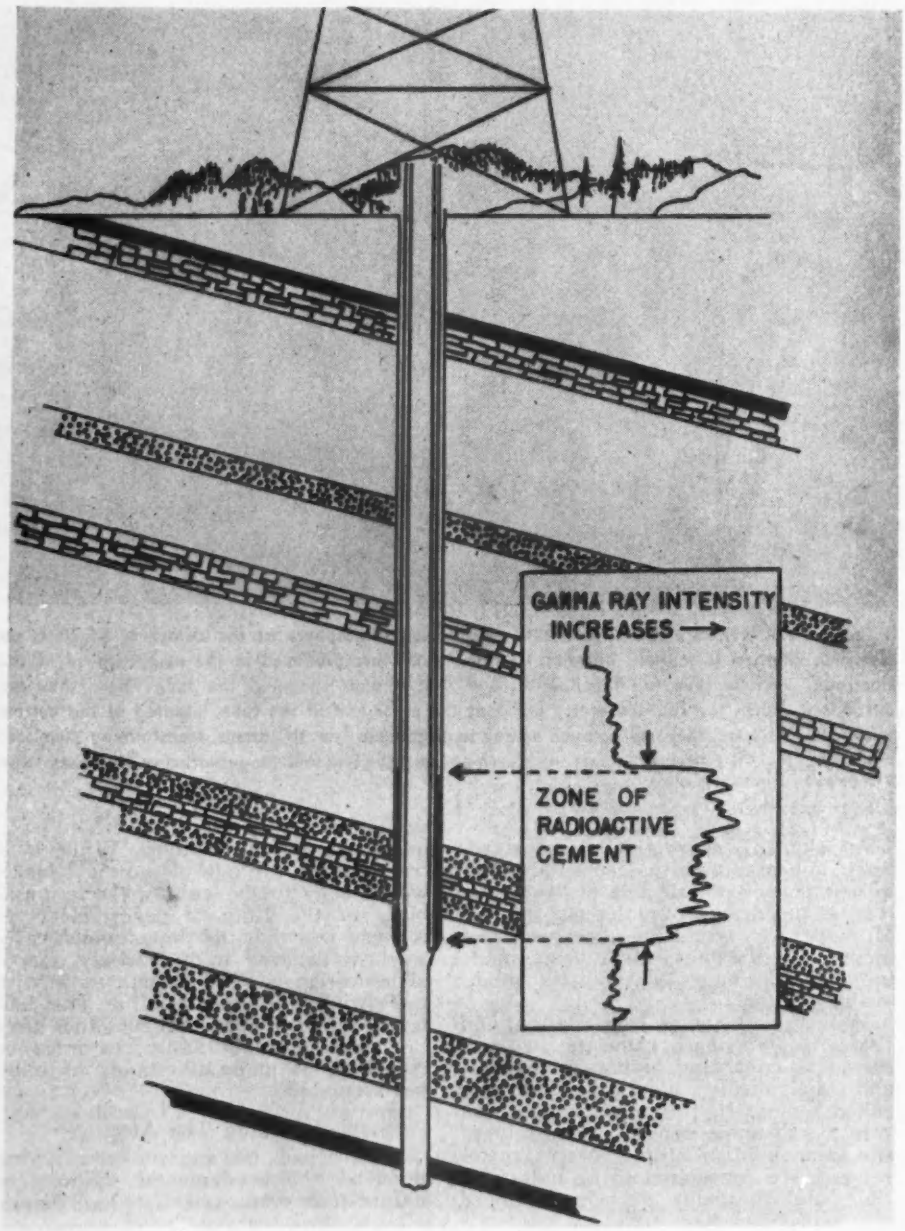


Figure 2. Use of artificially radioactivated cement to identify cement behind the casing is shown here. Gamma rays emitted by the artificially radioactive substance in the cement penetrate the steel pipe and are registered by an instrument (not shown) lowered inside the pipe. If one uses a suitable artificial radioelement the radioactivity initially present will be all gone when it is necessary to do a squeeze job, enabling the squeezed cement to be identified similarly and separately, without confusion due to cement originally present.

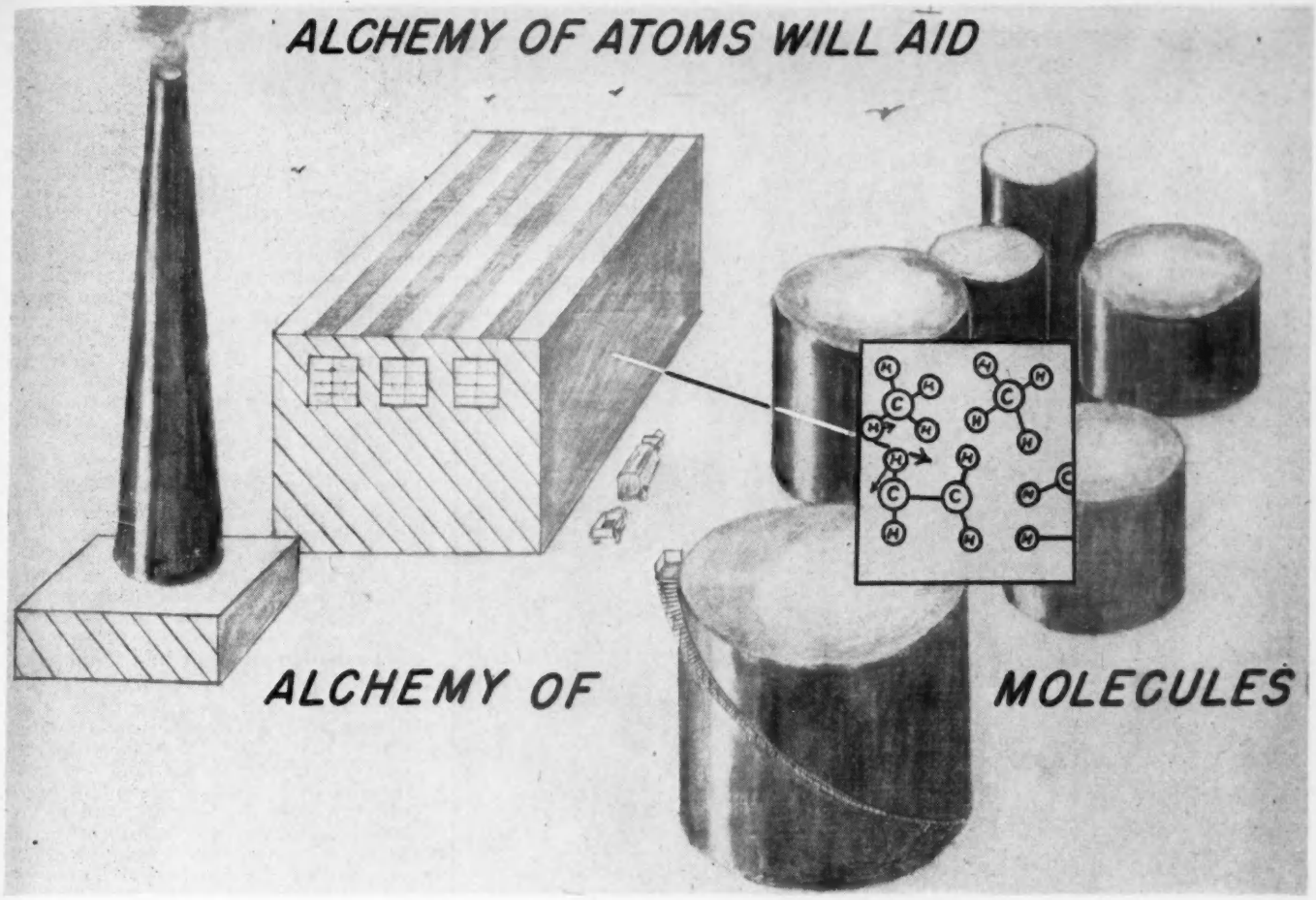


Figure 3. Is an ideogram drawn to emphasize the concept that energy from atomic sources can be used in the chemurgy of petroleum, to assist in making from it the many things that give it the highest utility. Energy may be employed as radiation, as suggested by this diagram, or in other forms indirectly obtained from an atomic energy plant, as heat, or electricity, if desired.

found. Long a recluse of the laboratory, atomic science has reached a point of development where its material consequences are at hand, for the oil industry, for the steel industry, and for every industry, and for all the organizations of man. The future is full of portents, some good, some bad. Nowhere in the world is government mature enough to be ready to effectively control the forces of the atomic age in the interest of mankind.

As we have remarked earlier, the agencies of atomic science are matter and energy. The transformations of matter which are of interest involve manufacture of new kinds of atoms from those which already exist, or, perhaps, the manufacture of very scarce kinds of atoms in greater abundance. Out of the new kinds of atoms which the atomic age makes available, molecules may be built . . . molecules the properties of which will be determined by the nature of the atoms of which they consist. Some new kinds of atoms, outside the pre-Alamagordo list, are already known which may be used in various states of chemical combination for many purposes of value to man. We wait only for greater availability of these.

Direct use of new kinds of matter produced by atomic technologies will not be first among the steps to be taken, however. Such substances will first be

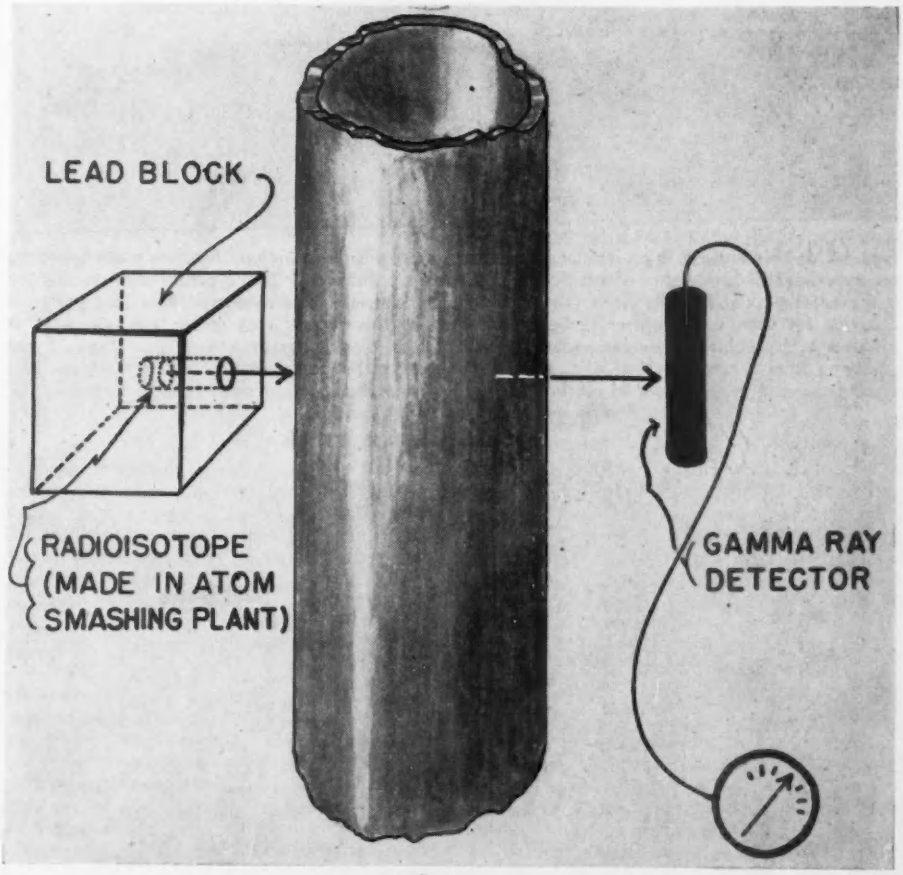


Figure 4. This diagram shows how it is possible to generate and direct gamma rays, and by their degree of penetration ascertain continuously the density of the fluid flowing through the pipe. No holes of any sort are needed in the pipe, the rays penetrate it easily. The more dense the fluid, the less radiation arrives at the detector. Density may be recorded continuously if desired. Because lead strongly absorbs gamma rays, only those emitted along the axis of the hole in the block are used, and these pass directly through the center of the pipe, thereby sampling the fluid to best advantage.

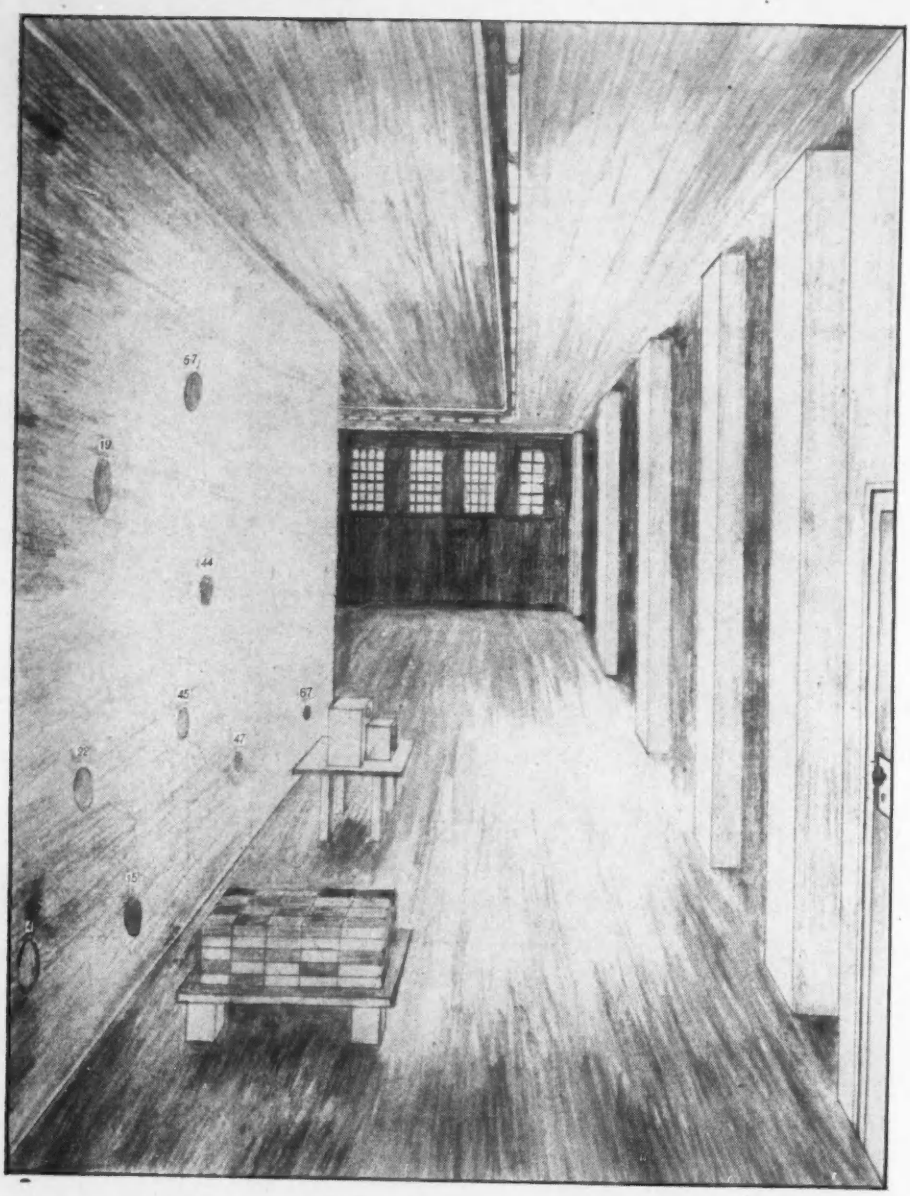


Figure 5. In this drawing is an imaginative version of the inside of a chain reaction plant operating for experimental production of artificially radioactive substances. The concrete wall at the left is the outer wall of the pile itself (10 to 15 feet of concrete). The numbered holes are points of insertion for samples of matter to be transformed by the nuclear rays in the reacting mass of uranium and graphite inside the wall. The pile of lead blocks (foreground) stop a beam of rays emerging from a hole which is open. Radiation meters on the table monitor rays coming out of a small hole, and operate control mechanisms which keep the reacting mass from operating at too high a power and becoming overheated.

used to identify other ordinary matters with which they may be mixed, for the purpose of tracing an element through a series of chemical transformations, or for determining the location of material behind a pipe, or inside a steel tank. In Figure 1 and in Figure 2 we have shown diagrammatically two such uses in the oil industry of substances which are to be available from the matter-transforming services of the atomic technology of the future.

Energy from the instrumentalities of atomic technology differs from the energy obtained by other means in one respect only, that it starts out exclusively as radiation. The radiations in which atomic energy is first liberated are almost wholly made up of invisible deadly rays, rays not easily observable by common measuring devices of other branches of technology. These radiations themselves have great influence in bringing about or altering various chemical reactions. They also have great possibilities of use biologically. Organic compounds affected by one kind of nuclear rays (gamma rays) include such diverse substances as egg albumin, and butane. The egg albumin is coagulated, much as when it is cooked. Butane is transformed into oils, waxy solids, and hydrogen. Bacteria are immediately destroyed by sufficient intensity of gamma rays.

An abstract idea of the function of nuclear energy, and radiation, in the petroleum industry, is conveyed by Figure 3. Atomic energy also may be used, in the form of gamma rays, for measuring the thickness of materials, or for observing and continuously recording density of fluid passing through a pipe. Figure 4 illustrates this idea. When the method of Figure 4 has been further perfected, it will allow greater accuracy and continuity of measurement than will be possible with any workable method or sampling. Heterogeneous materials will be much more satisfactorily observed in this way than by other methods.

The time may come when stationary power sources used to supply the large requirements for heat and motion used in refineries and chemical plants will be atomic energy plants, but this is a second phase of the incursion of the atomic age on the petroleum industry. When this second phase arrives, there will be more emphasis on manufacture of petroleum into plastics, fabrics, organic chemicals, textiles, and dyestuffs, and special lubricants, and considerably less emphasis on the major fuel uses of petroleum products. Other uses which are now depleting our oil reserves, such as space heating, and large stationary power, will no doubt be taken care of by atomic energy plants.

Tools of Petroleum-Atomic Technology

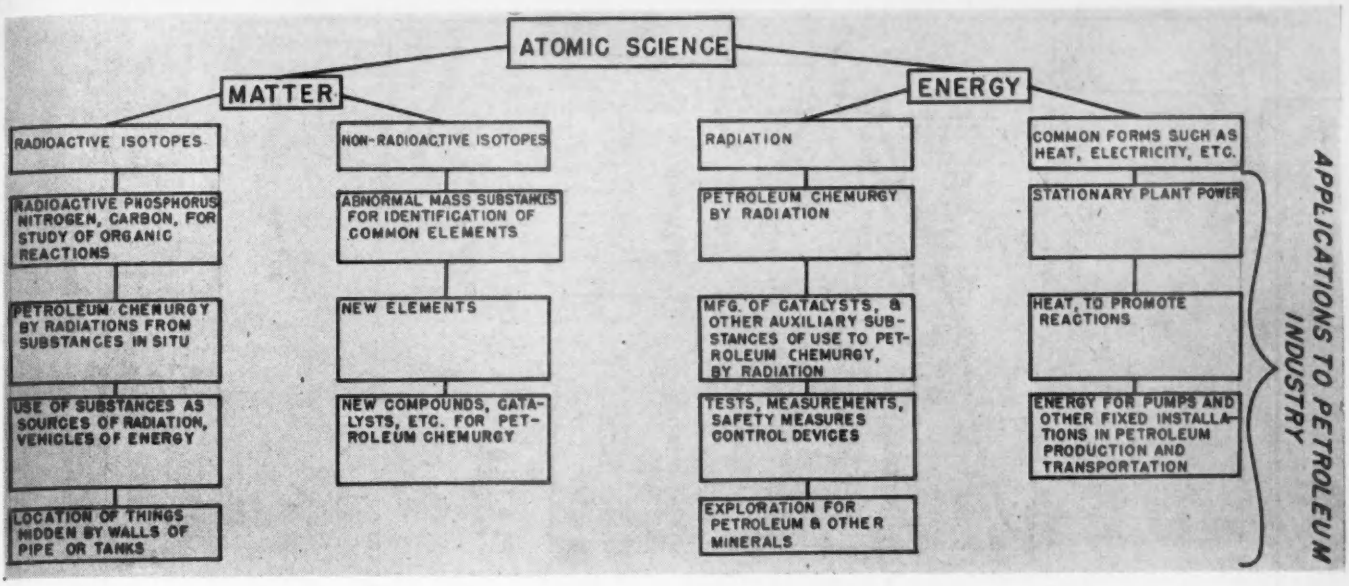
Tools of petroleum-atomic technology in the coming era of development are:

1. Major sources of atomic energy.
2. Means of employing other energy to create new kinds of atoms.
3. Means of observing and measuring presence of new kinds of atoms, by radiations they emit, or otherwise.

Item one, as we understand it at present, means chain reaction piles. These have a complicated theory of operation, which lies outside the scope of this paper. Suffice it to say that the theory permits them to be designed in practically all sizes, from very small to very large, and used to transform certain kinds of matter into energy with the greatest effectiveness which has as yet been observed in transformations of atoms. Chain reaction piles develop heat which may be used to drive engines. Chain reaction piles are in themselves tremendous potential sources of radiation which may be employed directly to promote chemical changes in petroleum molecules, if desired. Chain reaction piles are also the means of making a long list of new substances, of which only plutonium has had warlike use so far. In Figure 5 the author has pictured an imaginative version of the appearance of the interior of a chain reaction plant devoted to experimental production of new kinds of matter.

For the second class of tools of petroleum-atomic technology, we have to look chiefly to developments which had achieved a considerable degree of maturity prior to the work on the atomic bomb. The cyclotron probably has the greatest general usefulness in prospect, although it is a very expensive device. The betatron is of interest because of its ability to manufacture radiations like cosmic rays, which cannot be made in other ways at present. The pressure Van de Graaf machine is of interest because of the inexpensiveness and simplicity of some of its more recent versions. As an outgrowth of the high frequency sounding work done in the war, the feasibility of another device called a linear accelerator has been greatly increased. A very powerful machine of this type is under construction at the Berkely radiation laboratory of the University of California.

All these devices are of interest, and will continue to be of interest to petroleum technologists wishing to use materials of the atomic age. This is so, in spite of the great power of chain reaction piles, because of the fact that the machines can do different things, things which the piles cannot do, and can make substances for use in petroleum


ATOMIC SCIENCE
MATTER
ENERGY
RADIOACTIVE ISOTOPES
NON-RADIOACTIVE ISOTOPES
RADIATION
COMMON FORMS SUCH AS HEAT, ELECTRICITY, ETC.
RADIOACTIVE PHOSPHORUS NITROGEN, CARBON, FOR STUDY OF ORGANIC REACTIONS
ABNORMAL MASS SUBSTANCES FOR IDENTIFICATION OF COMMON ELEMENTS
PETROLEUM CHEMURGY BY RADIATION
STATIONARY PLANT POWER
PETROLEUM CHEMURGY BY RADIATIONS FROM SUBSTANCES IN SITU
NEW ELEMENTS
MFG. OF CATALYSTS, & OTHER AUXILIARY SUBSTANCES OF USE TO PETROLEUM CHEMURGY, BY RADIATION
HEAT, TO PROMOTE REACTIONS
USE OF SUBSTANCES AS SOURCES OF RADIATION, VEHICLES OF ENERGY
NEW COMPOUNDS, CATALYSTS, ETC. FOR PETROLEUM CHEMURGY
TESTS, MEASUREMENTS, SAFETY MEASURES CONTROL DEVICES
ENERGY FOR PUMPS AND OTHER FIXED INSTALLATIONS IN PETROLEUM PRODUCTION AND TRANSPORTATION
LOCATION OF THINGS HIDDEN BY WALLS OF PIPE OR TANKS
EXPLORATION FOR PETROLEUM & OTHER MINERALS
APPLICATIONS TO PETROLEUM INDUSTRY

The chart shows how the several categories of atomic science are related to the petroleum industry.

technology, which the piles cannot make.

In order to avoid the use of dangerously strong sources of radiation, and in order to prevent measurements from interfering with one another, sensitive tools for measuring radiation are needed. Fortunately, these exist, and have existed for a long time. It is to be hoped that, in our haste to get into production, the rough hand of factory engineering will not deal too harshly with the elegant methods of the laboratory. Unreliable measurements can be a source of very great troubles.

To detect the presence of new kinds of atoms where these atoms are not emitters of radiation, the mass spectograph may be called on to serve. With proper agencies for their detection, any new kind of atoms may serve very well to trace a reaction involved in petroleum chemistry. Non-radiating substances have the great advantage of not being dangerous to be near, or to ingest, to the same extent as with substances which are radioactive.

Problems of Petroleum-Atomic Technology

Every great new technological advance has its growing pains. We list here a few which will attend the incursion of atomic science into petroleum development:

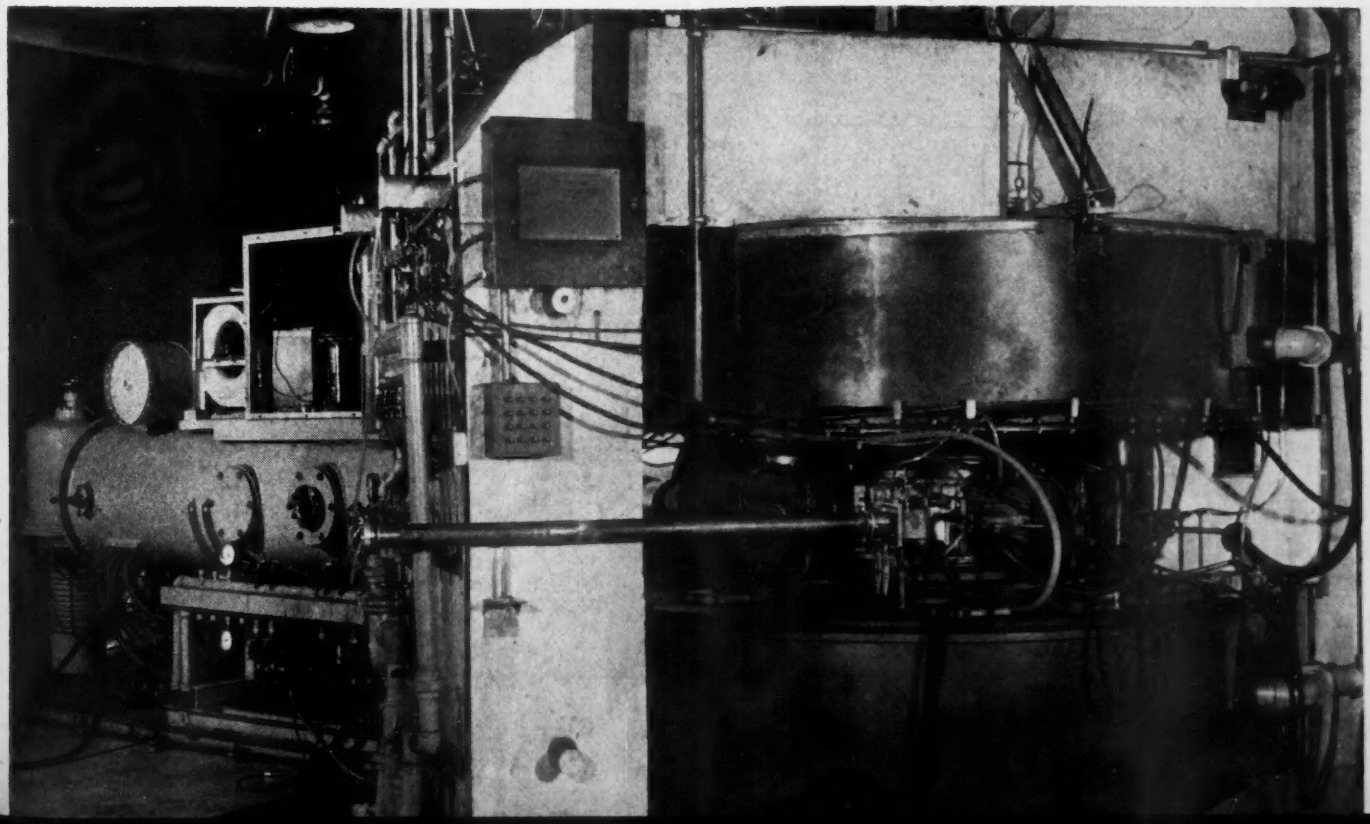
1. Personnel hazards
   a. External radiation exposure
   b. Ingested material
2. Education Problems
   New concepts and working habits must be developed.
3. Extensive research, some of it very nearly in pure science, must be done to avoid "working in the dark."
4. Readjustments within the oil industry will be required to compensate for economic effects of the incursion of atomic technology.
5. Government interference in legitimate aims of industry will be frequent, must be resisted.

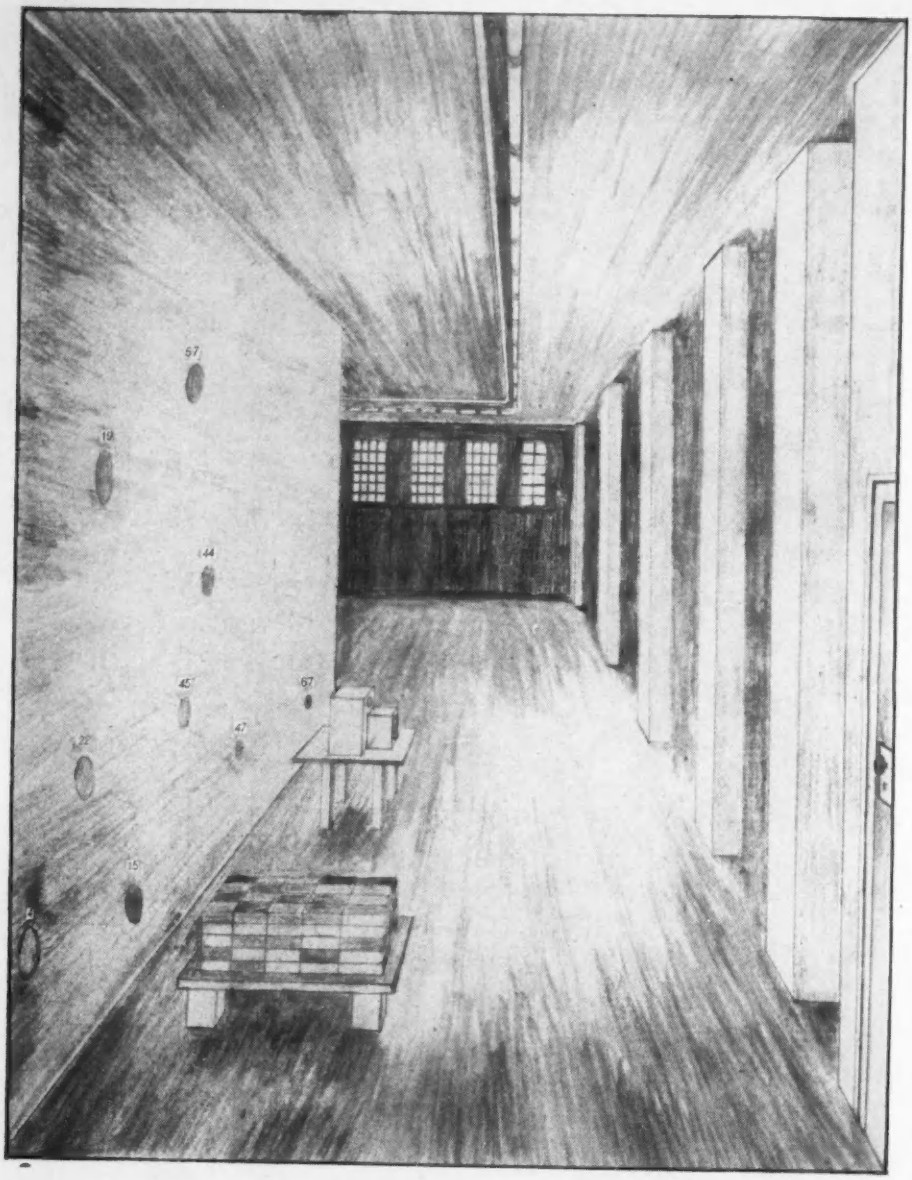
The author expresses his thanks to the officers of Well Surveys, Inc., for the use of that firm's facilities in the preparation of this article. He expresses appreciation also to E. C. Stuedle and Jean Thayer, and to Mrs. Fearon for reading proof and for criticizing the original drawings.

REFERENCE

1 "Oil Uses for the Atom," THE OIL WEEKLY, Sept. 10.

Figure 6. This photo, furnished by Washington University, St. Louis, Mo., shows the major parts of the structure of the cyclotron located there. The large coils, enclosed in the upper and lower shallow tanks, in the foreground, produce intense magnetism in the iron, and in the space between the poles, center of the picture, between the tanks, and hidden by small parts. A column of charged atoms spins around in this disc shaped space, as though it were two spokes of a wheel. Rotation is maintained by high frequency electrical energy supplied through electrodes there. Charged atoms are added at the center (middle of the column of charged atoms) and are taken off at the periphery of the disc, where the spoke is moving the fastest. This is really a sort of slingshot for charged atoms.





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used to identify other ordinary matters with which they may be mixed, for the purpose of tracing an element through a series of chemical transformations, or for determining the location of material behind a pipe, or inside a steel tank. In Figure 1 and in Figure 2 we have shown diagrammatically two such uses in the oil industry of substances which are to be available from the matter-transforming services of the atomic technology of the future.

Energy from the instrumentalities of atomic technology differs from the energy obtained by other means in one respect only, that it starts out exclusively as radiation. The radiations in which atomic energy is first liberated are almost wholly made up of invisible deadly rays, rays not easily observable by common measuring devices of other branches of technology. These radiations themselves have great influence in bringing about or altering various chemical reactions. They also have great possibilities of use biologically. Organic compounds affected by one kind of nuclear rays (gamma rays) include such diverse substances as egg albumin, and butane. The egg albumin is coagulated, much as when it is cooked. Butane is transformed into oils, waxy solids, and hydrogen. Bacteria are immediately destroyed by sufficient intensity of gamma rays.

An abstract idea of the function of nuclear energy, and radiation, in the petroleum industry, is conveyed by Figure 3. Atomic energy also may be used, in the form of gamma rays, for measuring the thickness of materials, or for observing and continuously recording density of fluid passing through a pipe. Figure 4 illustrates this idea. When the method of Figure 4 has been further perfected, it will allow greater accuracy and continuity of measurement than will be possible with any workable method or sampling. Heterogeneous materials will be much more satisfactorily observed in this way than by other methods.

The time may come when stationary power sources used to supply the large requirements for heat and motion used in refineries and chemical plants will be atomic energy plants, but this is a second phase of the incursion of the atomic age on the petroleum industry. When this second phase arrives, there will be more emphasis on manufacture of petroleum into plastics, fabrics, organic chemicals, textiles, and dyestuffs, and special lubricants, and considerably less emphasis on the major fuel uses of petroleum products. Other uses which are now depleting our oil reserves, such as space heating, and large stationary power, will no doubt be taken care of by atomic energy plants.

Tools of Petroleum-Atomic Technology

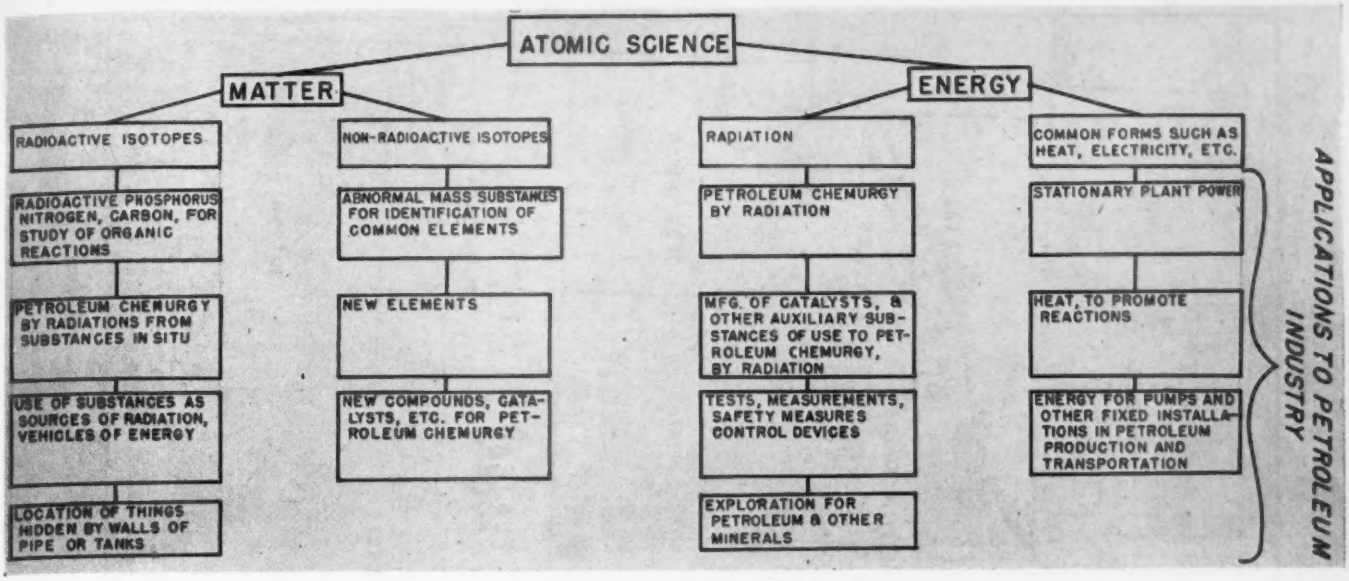
Tools of petroleum-atomic technology in the coming era of development are:

1. Major sources of atomic energy.
2. Means of employing other energy to create new kinds of atoms.
3. Means of observing and measuring presence of new kinds of atoms, by radiations they emit, or otherwise.

Item one, as we understand it at present, means chain reaction piles. These have a complicated theory of operation, which lies outside the scope of this paper. Suffice it to say that the theory permits them to be designed in practically all sizes, from very small to very large, and used to transform certain kinds of matter into energy with the greatest effectiveness which has as yet been observed in transformations of atoms. Chain reaction piles develop heat which may be used to drive engines. Chain reaction piles are in themselves tremendous potential sources of radiation which may be employed directly to promote chemical changes in petroleum molecules, if desired. Chain reaction piles are also the means of making a long list of new substances, of which only plutonium has had warlike use so far. In Figure 5 the author has pictured an imaginative version of the appearance of the interior of a chain reaction plant devoted to experimental production of new kinds of matter.

For the second class of tools of petroleum-atomic technology, we have to look chiefly to developments which had achieved a considerable degree of maturity prior to the work on the atomic bomb. The cyclotron probably has the greatest general usefulness in prospect, although it is a very expensive device. The betatron is of interest because of its ability to manufacture radiations like cosmic rays, which cannot be made in other ways at present. The pressure Van de Graaf machine is of interest because of the inexpensiveness and simplicity of some of its more recent versions. As an outgrowth of the high frequency sounding work done in the war, the feasibility of another device called a linear accelerator has been greatly increased. A very powerful machine of this type is under construction at the Berkely radiation laboratory of the University of California.

All these devices are of interest, and will continue to be of interest to petroleum technologists wishing to use materials of the atomic age. This is so, in spite of the great power of chain reaction piles, because of the fact that the machines can do different things, things which the piles cannot do, and can make substances for use in petroleum


ATOMIC SCIENCE
MATTER
ENERGY
RADIOACTIVE ISOTOPES
NON-RADIOACTIVE ISOTOPES
RADIATION
COMMON FORMS SUCH AS HEAT, ELECTRICITY, ETC.
RADIOACTIVE PHOSPHORUS NITROGEN, CARBON, FOR STUDY OF ORGANIC REACTIONS
ABNORMAL MASS SUBSTANCES FOR IDENTIFICATION OF COMMON ELEMENTS
PETROLEUM CHEMURGY BY RADIATION
STATIONARY PLANT POWER
PETROLEUM CHEMURGY BY RADIATIONS FROM SUBSTANCES IN SITU
NEW ELEMENTS
MFG. OF CATALYSTS, & OTHER AUXILIARY SUBSTANCES OF USE TO PETROLEUM CHEMURGY, BY RADIATION
HEAT, TO PROMOTE REACTIONS
USE OF SUBSTANCES AS SOURCES OF RADIATION, VEHICLES OF ENERGY
NEW COMPOUNDS, CATALYSTS, ETC. FOR PETROLEUM CHEMURGY
TESTS, MEASUREMENTS, SAFETY MEASURES CONTROL DEVICES
ENERGY FOR PUMPS AND OTHER FIXED INSTALLATIONS IN PETROLEUM PRODUCTION AND TRANSPORTATION
LOCATION OF THINGS HIDDEN BY WALLS OF PIPE OR TANKS
EXPLORATION FOR PETROLEUM & OTHER MINERALS
APPLICATIONS TO PETROLEUM INDUSTRY

The chart shows how the several categories of atomic science are related to the petroleum industry.

technology, which the piles cannot make.

In order to avoid the use of dangerously strong sources of radiation, and in order to prevent measurements from interfering with one another, sensitive tools for measuring radiation are needed. Fortunately, these exist, and have existed for a long time. It is to be hoped that, in our haste to get into production, the rough hand of factory engineering will not deal too harshly with the elegant methods of the laboratory. Unreliable measurements can be a source of very great troubles.

To detect the presence of new kinds of atoms where these atoms are not emitters of radiation, the mass spectograph may be called on to serve. With proper agencies for their detection, any new kind of atoms may serve very well to trace a reaction involved in petroleum chemistry. Non-radiating substances have the great advantage of not being dangerous to be near, or to ingest, to the same extent as with substances which are radioactive.

Problems of Petroleum-Atomic Technology

Every great new technological advance has its growing pains. We list here a few which will attend the incursion of atomic science into petroleum development:

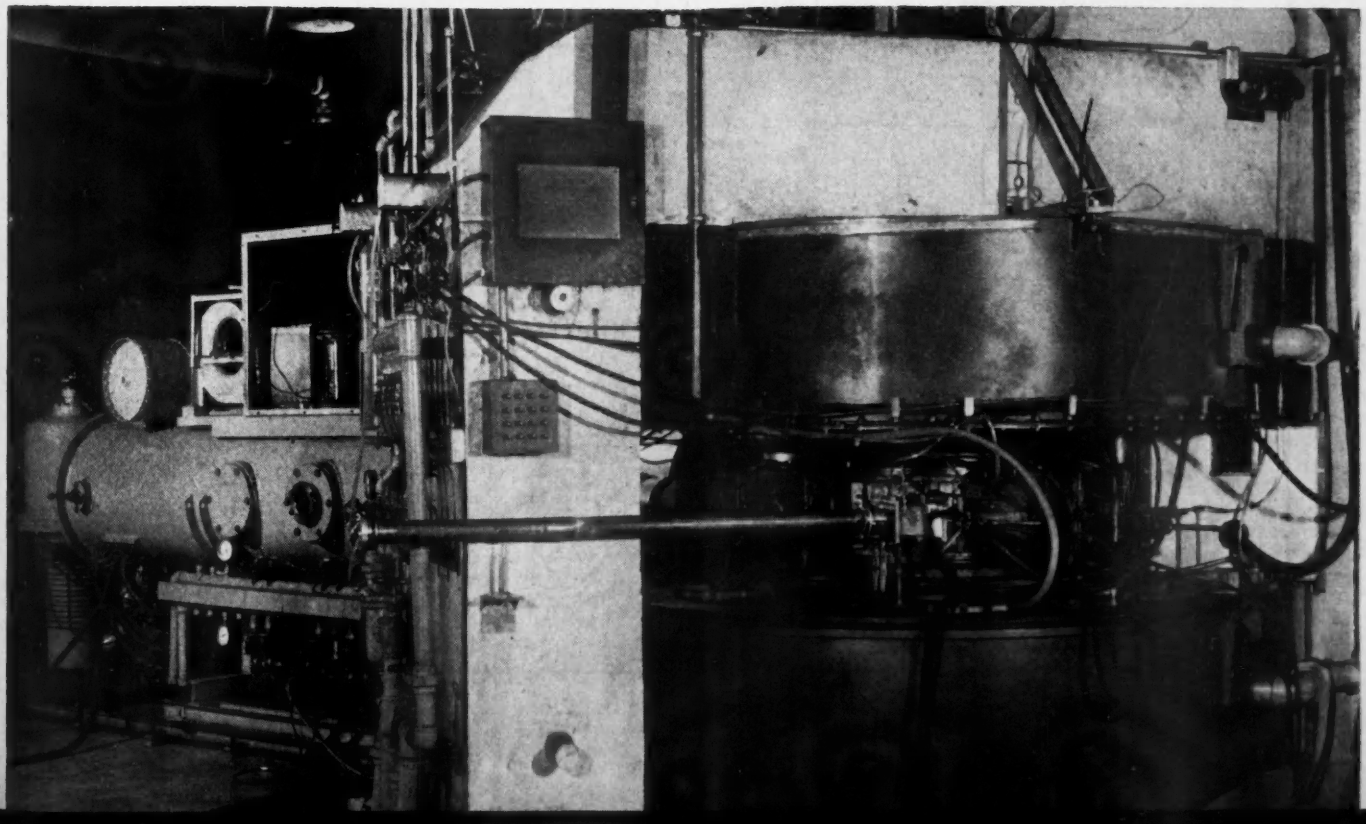
1. Personnel hazards
   a. External radiation exposure
   b. Ingested material
2. Education Problems
   New concepts and working habits must be developed.
3. Extensive research, some of it very nearly in pure science, must be done to avoid "working in the dark."
4. Readjustments within the oil industry will be required to compensate for economic effects of the incursion of atomic technology.
5. Government interference in legitimate aims of industry will be frequent, must be resisted.

The author expresses his thanks to the officers of Well Surveys, Inc., for the use of that firm's facilities in the preparation of this article. He expresses appreciation also to E. C. Stuedle and Jean Thayer, and to Mrs. Fearon for reading proof and for criticizing the original drawings.

REFERENCE

1 "Oil Uses for the Atom," THE OIL WEEKLY, Sept. 10.

Figure 6. This photo, furnished by Washington University, St. Louis, Mo., shows the major parts of the structure of the cyclotron located there. The large coils, enclosed in the upper and lower shallow tanks, in the foreground, produce intense magnetism in the iron, and in the space between the poles, center of the picture, between the tanks, and hidden by small parts. A column of charged atoms spins around in this disc shaped space, as though it were two spokes of a wheel. Rotation is maintained by high frequency electrical energy supplied through electrodes there. Charged atoms are added at the center (middle of the column of charged atoms) and are taken off at the periphery of the disc, where the spoke is moving the fastest. This is really a sort of slingshot for charged atoms.



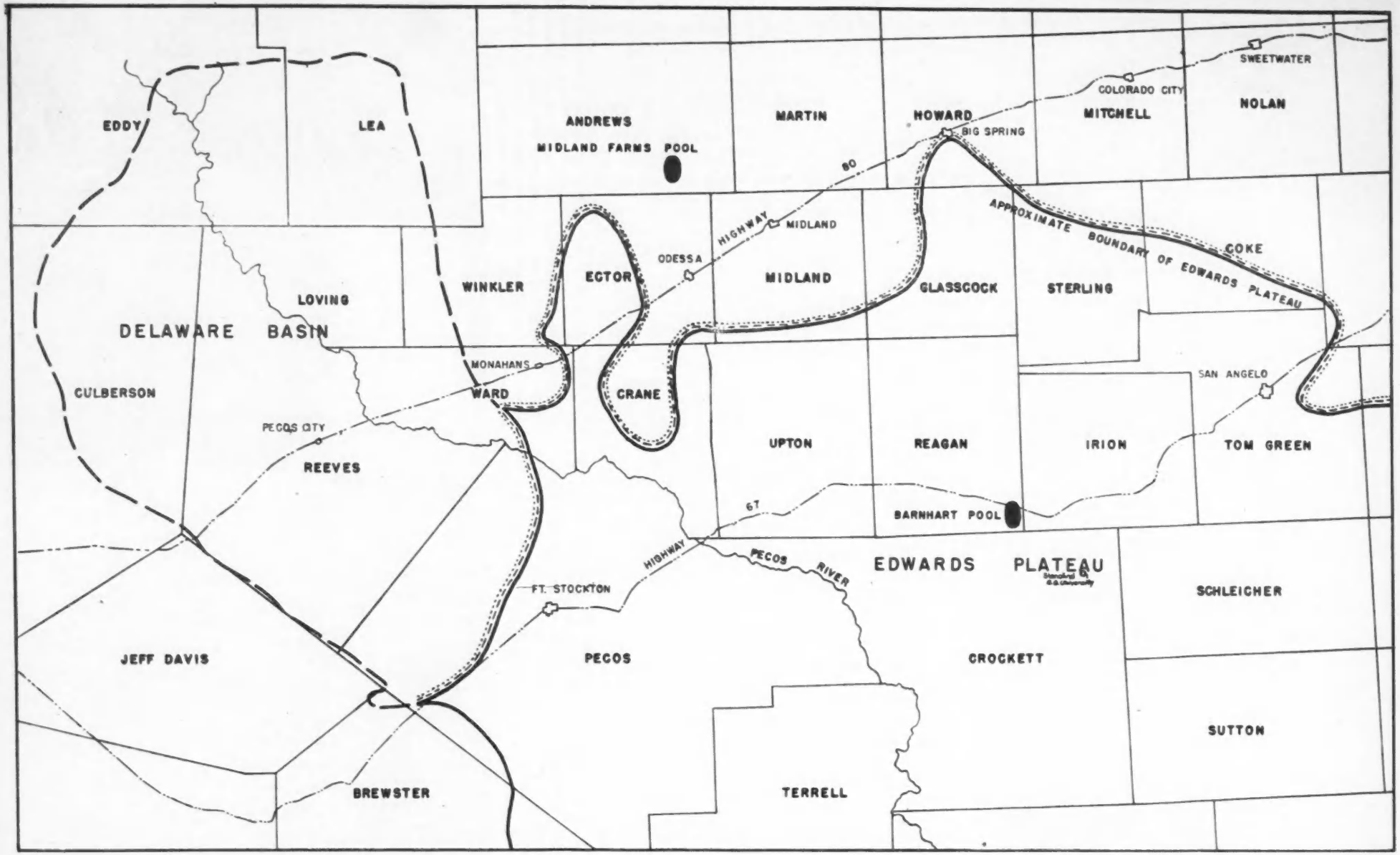


Figure 1. Portion of West Texas showing approximate boundaries of refraction provinces and discoveries generally credited to the refraction seismic method.

West Texas

MODERN REFRACTION SEISMIC EXPLORATION

By SIDON HARRIS, Southern Geophysical Company, Inc., Fort Worth

MODERN refraction seismic techniques on the Edwards Plateau area of West Texas have quite recently gained considerable attention as a result of several discoveries and favorable showings of oil and gas. Latest encouraging test is Stanolind Oil & Gas Company's G. G. University 1, Sect. 12, Block 39, University Lands, Crockett, Texas. This test was staked on a refraction seismic prospect, and if the well should result in the discovery of a new field (which it gives every indication of doing at the present time), it undoubtedly will be considered as a clearcut refraction seismic discovery. Even before this test made favorable shows in the Ellenburger, considerable refraction activity was present in the Edwards Plateau area during the late spring and early summer of this year. At least 15 refraction seismograph parties were operating in this province on August 1.

The general boundaries of the Edwards Plateau are shown on Figure 1. Considerable interest was aroused a few years ago as a result of the discovery of the Barnhart Pool of southeast Regan County by Amerada Petroleum Corporation. This field has been considered by the industry as a refraction seismograph discovery. Except for extremely isolated local areas, it is a generally accepted fact that ordinary reflection techniques do not obtain satisfactory results in the area shown on Figure 1 as the "Edwards Plateau."

Cause of this condition is a thick layer of Edwards lime covering the province with very little, if any, surface soil. Local disturbances created by the explosion of dynamite in the shot holes prevent the reception of clear reflection data. However, since the seismometers are placed four to eight miles away from the shot point in refraction shooting, this surface disturbance originating at the shot point does not interfere with the reception of refractions.

In addition to the Edwards Plateau Province, it has also been the experience of many operators that the area shown in Figure 1 as the Delaware Basin is not readily adapted to reflection exploration. In general, this Province should be classified as a refraction one also.

In addition to these two large areas, there are many local spots in the Permian Basin where outcrops of caliche interfere with clear reception of seismic reflections. The refraction technique combined with reflection shooting in many of these local spots is very useful. As a matter of fact, Stanolind's discovery of the Midland Farms Pool in southeast Andrews County is a result of a combination of these two methods of exploration.

In short, the discovery of the Barnhart Pool; the discovery of the Midland Farms Pool, which can be attributed at least in part to refraction shooting, and the present indications of the Stanolind G. G. University 1, contributes strong evidence to the fact that modern refraction techinques in West Texas do have some significance.

New Techniques

The essential difference between so-called modern day "multiple refraction" techniques and the old "first break" method, used in the 1920's with marked success in locating salt domes in the Gulf Coast area, and to a somewhat lesser extent in West Texas, is that the modern techniques do not require true "first breaks," whereas the older original method did require these "first arrivals." The principal advantage of the modern technique is that greater depth penetration usually can be obtained with considerably less dynamite.

Figure 2 is a schematic diagram illustrating the approximate travel paths of refracted energy from the Ellenburger in the Black Shale Basin underlying the Edwards Plateau. It can be seen from the figure that the arrival times of the refraction coming from the Ellenburger out of shot point No. 1 and shot point No. 3 to the corresponding spreads of seismometers requires greater time than the record obtained from shot point No. 2 to the indicated spread of seismometers. Where the refraction from a particular bed can be carried by correlation of character shown on the recordings, it is a simple matter to compute relative differences in the elevation of the refracting surface for the various spreads.

Figure 3 illustrates a multiple refraction seismic record obtained on the Plateau. The first two refractions picked on the record are from shallow Permian horizons. The third refraction noted on this record is believed to come from the Ellenburger.

A number of technical papers have been published in the past few years describing various techniques of computational procedure for the refraction method.[1, 2, 3, 4, 5, 6, 7]

Refraction seismograph exploration is not recommended in general except where unsatisfactory reflection results are obtained. The accuracy of the refraction method is not as great as the reflection method and in general it is more expensive. In addition, in a good many areas the depth penetration of the refraction method is not as great as the reflection technique.

Seismic shot hole blowing after detonation of a refraction shot.

Average Crew For The Edwards Plateau

Up to a certain point, the equipment for a refraction crew is the same as that of a reflection party. Figure 4 illustrates the equipment of a basic seismograph field party for West Texas which can be used either for refractions or reflections. Most geophysical contracting companies divide their quotations into a "basic rate," which includes the base personnel and equipment; and then quote extra pieces of equipment and personnel that may be desired as an additional expense.

On the Edwards Plateau it is recommended that one rotary type shot hole drill be included for "cleanout" purposes and the drilling of shallow weathering holes. In addition, it is recommended that three "spudder type" shot hole drills be used. These "spudders" usually can be obtained from independent shot hole drilling contractors. The prevailing price at present for this service is $1.25 per foot. Most basic seismograph field

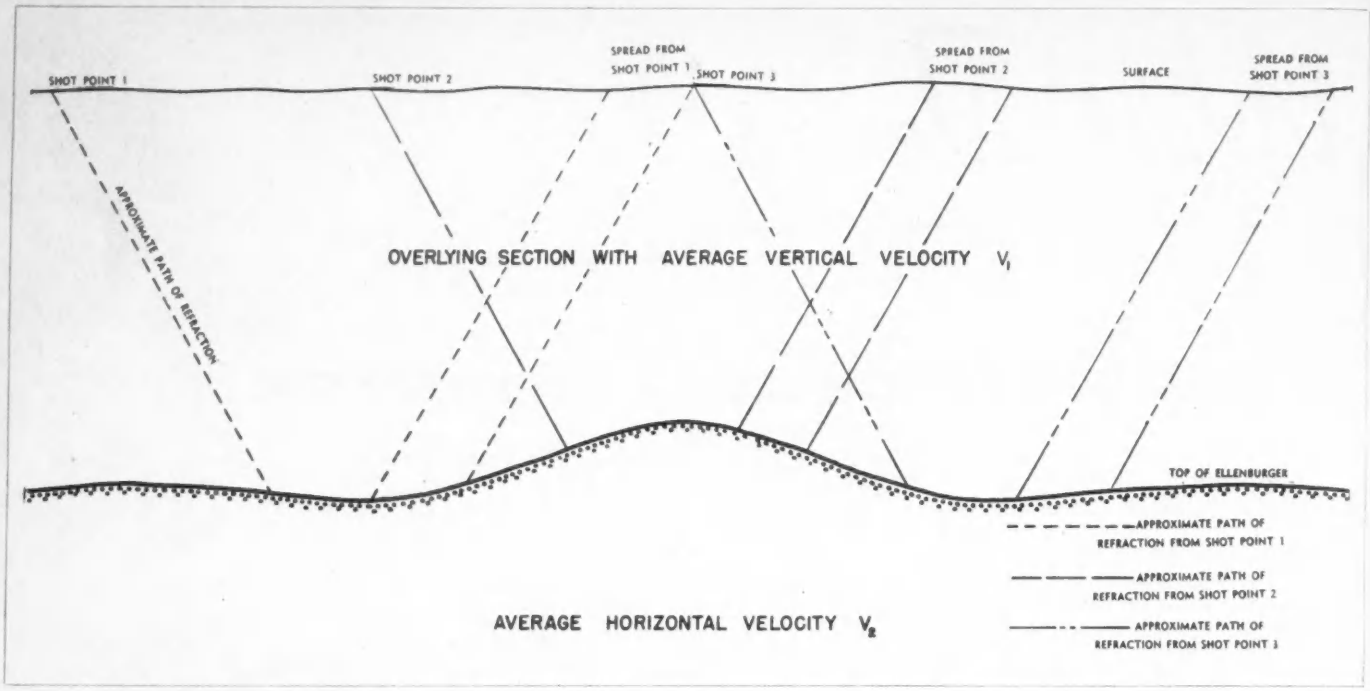

SHOT POINT 1
SHOT POINT 2
SPREAD FROM SHOT POINT 1
SHOT POINT 3
SPREAD FROM SHOT POINT 2
SURFACE
SPREAD FROM SHOT POINT 3
APPROXIMATE PATH OF REFRACTION
OVERLYING SECTION WITH AVERAGE VERTICAL VELOCITY V_1
TOP OF ELLENBURGER
APPROXIMATE PATH OF REFRACTION FROM SHOT POINT 1
APPROXIMATE PATH OF REFRACTION FROM SHOT POINT 2
APPROXIMATE PATH OF REFRACTION FROM SHOT POINT 3
AVERAGE HORIZONTAL VELOCITY V_2

Figure 2. Schematic diagram of approximate refraction paths from various shot points to the corresponding spread of seismometers. The refraction path from Shot Point 2 to the corresponding spread requires less travel time than the corresponding paths from Shot Points 1 and 3 due to structural relief on the refracting horizon.

parties can be obtained for about $8250 a month at the present time.

Refraction shooting on the Edwards Plateau requires a minimum of one additional surveying crew which will cost approximately $1500 a month extra. The cost of explosives on the Edwards Plateau will probably average $400 a month. Permit fees vary somewhat but will probably average about $4000 a month also.

Incidentally, the permit problem not only on the Edwards Plateau, but in the Permian Basin itself, is one of the most critical problems confronting seismic exploration in this area. Permit fees are naturally higher in "hot areas." In certain portions of the Edwards Plateau these fees run as high as $10 a day and $10 a hole. On the so-called "Platform" area of the Permian Basin, covering the western portions of Ector, Andrews, and Gaines counties, these fees have been running as high as $50 a hole during the current year. In some cases it is absolutely impossible to obtain permission to survey certain tracts without first acquiring leases. It is highly advisable to have one man assigned to each seismograph crew devoting his entire time to the problem of acquiring permits. As a matter of fact, it is recommended that advance permit work be done on any area in West Texas before moving a seismograph crew into actual operation. In short, an average seismograph crew equipped for refraction work on the Edwards Plateau including the basic equipment shown on Figure 4 plus an additional surveying unit, one additional permit man with car, and three spudder type shot hole drills, will cost the operator approximately $25,000 a month. The area covered per month by such a crew will vary considerably depending upon the type of work. Reconnaissance correlation shooting, of course, covers ground much more rapidly than continuous detail work. Under ideal conditions it is possible to cover about 50 sections a month, operating exclusively on a reconnaissance basis. With tight detail control in very rough terrain, a crew may at times cover only ten or twelve sections a month.

Many unusual operational problems confront refraction exploration on the Edwards Plateau; by no means the least of these problems is housing. Towns are few and far between, and offer very little, if any, additional living facilities for the transient oil workers. This problem is currently being partially solved by employing single men whenever possible, and in some cases by furnishing temporary camps composed of prefabricated houses and trailers.

Depth Penetration and Resolving Power

In general, on the Edwards Plateau it is possible to reach pre-Permian strata with the modern day refraction technique, going at times as deep as the Ellenburger itself. However, in that portion of Crane, Ector, Winkler, and Ward counties where reflection data is not obtainable, it is very difficult to penetrate below the Permian horizons with the refraction techniques. This condition

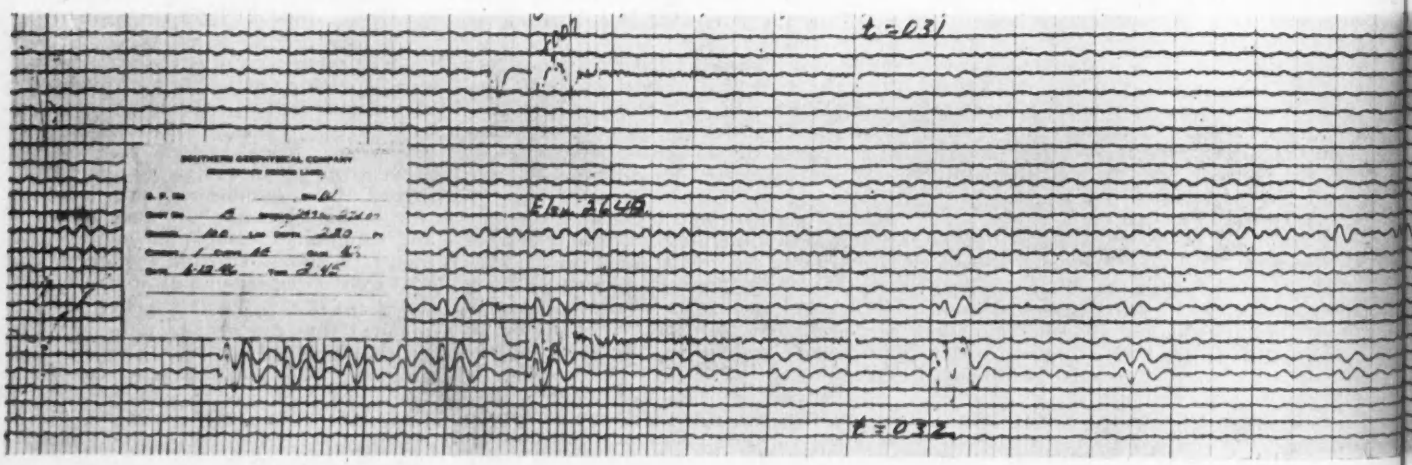


Figure 3. A typical multiple refraction seismic record obtained on the Edwards Plateau.

Figure 4. Equipment for standard "base" seismograph field party. Left to right, party chief's car, rotary shot hole drill, drill water truck, shooting truck, recording truck, and surveyor's jeep.

is true of the Delaware Basin, and in general other portions of the Permian Basin where refraction work is necessary due to the presence of caliche outcrops. The resolving power of the refraction technique is not as great as the reflection method due to many factors. However, it is safe to state that modern refraction techniques should detect with reliable accuracy possible structure with as much as 200 feet of closure at pre-Permian levels and with as much as 100 feet of closure at Permian levels.

General Recommendations

In planning a refraction campaign on the Edwards Plateau, it is important to consider the following factors:

1. Between December 15 and May 1 it is impossible to secure permits to do any type of geophysical work on University lands situated on the Edwards Plateau. This is a result of the so-called "lambing" season. Most privately owned ranches in this area will not grant permission for geophysical work during these months of the year.

2. Due to the extremely difficult permit situation on the Edwards Plateau, careful consideration should be given to planning the program and securing the permits several weeks in advance of actual shooting operations.

3. Careful consideration should be given to the technique planned to fit the particular problem at hand. Widely varied types of techniques are used both in reconnaissance and detail shooting, and should be altered considerably to fit not only the postulated geological problem, but also the permit and land situations.

In general, permit conditions in the Delaware Basin are much more favorable than on the Edwards Plateau. Also in this province, "spudder type drills" are not required and the usual shot hole rotary drill will answer the problem very nicely, causing considerable reduction in drilling cost.

In the Permian Basin proper, north of the Edwards Plateau, it is desirable to have a normal seismograph crew equipped to do refraction shooting without taking time out to change instruments or cables. Frequently, a normal reflection area in this region will develop a spot where satisfactory reflections cannot be obtained; in these cases it is advisable to do a few day's work with the refraction method. A good many geophysical contractors, as well as major oil companies, are so equipped to enable them to shoot reflections one day, refractions the next, and so on. This type of refraction shooting in the Permian Basin proves considerably less expensive than on the Edwards Plateau.

Generally speaking, it may be said that compared with a $25,000 monthly operational cost on the Edwards Plateau, an average reflection-refraction crew can be operated in the Delaware Basin and in other regions of the Permian Basin for approximately $17,000 a month. These approximate estimates include all costs of operation. Reflection exploration in the North Plains country, lying essentially north of Lubbock, can be done at a further reduction in cost due largely to the simplified drilling problem and permit situation. This reduction in operating cost is also true for the east side of the Permian Basin.

Historical Remarks

The historical development of modern day refraction techinques in West Texas is interesting. The first experimental work with modern refraction techniques in the Edwards Plateau was conducted by Amerada in the late 1930's. Amerada discovered the first productive field as a result of early work by this method. At about the same time the National Geophysical Company also began experimental work with this technique on the Plateau and on caliche-infested areas on the Permian Basin in West Texas and Eastern New Mexico. Stanolind began its experimental work in 1941 in this province. Since this date a number of additional operators have begun refraction exploration on the Plateau.

In spite of the many operational difficulties and high costs, it appears that the Edwards Plateau will witness a vigorous refraction campaign for the remainder of this year and perhaps for some time to come. It also appears that the Delaware Basin will receive more consideration in the future than it has in the past. It is also logical to assume that more combination refraction-reflection work will be done on the local caliche infested areas of the Permian Basin proper. One of the most important points to consider in the successful application of modern-day refraction techniques is the limitations of the method, and the use of long range careful planning with reference to an exploration program.

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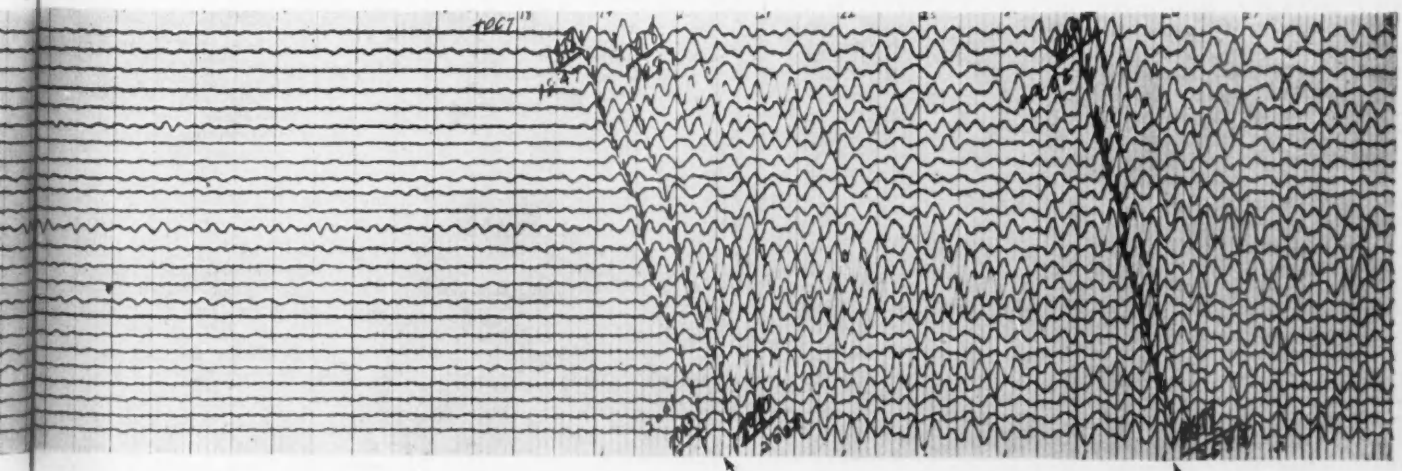

Radioactivity Well Logs

INTERPRETATION AND APPLICATION

By V. J. MERCIER

Part 1—Gamma Ray Curves

FOR the past several years radioactivity well logs have become increasingly popular as an instrument for scientific study of oil wells. Primarily designed for surveying old wells through the steel casing, for possible cased-off-production, the radioactivity log has found many varied uses in oil fields all over the world in both old and new wells.

To create a better understanding of the log, its myriad uses, and the interpretation of the logs, the accompanying text is presented.

EXTENSIVE investigations by science have shown that all terrestrial substances contain some radioactive material. In geology, this radioactive material occurred originally in the primary or igneous rocks. During the processes of erosion and redistribution this radioactivity was unequally distributed through the sedimentary beds.

It has been further proved by both laboratory analysis and radioactivity logs that, as a general rule, limestones, sandstones, and dolomites are very low in radioactivity content. Black shales and marine shales have the highest value of radioactivity encountered during most well surveys.

Dr. Wm. L. Russell has published two papers[1] which report the results and conclusions reached by laboratory analysis of more than 500 rock samples. The distribution of the radioactivity in the various sedimentary beds is thoroughly discussed in these articles. Table 1 represents the relative amounts of radioactive content of the various rock beds.

Dr. Russell has pointed out in his papers that an increase in radioactivity is directly proportional to an increase in shale or silt in the strata. Also, the shade or color of the rock has a relationship to the amount of radioactivity. The darker the shade or color, the higher the radioactivity, excluding rocks stained by oil or asphalt.

For general purposes we can conclude that formations encountered during a radioactivity survey will be of the values shown in Table 1. Two things must be kept in mind, however. The first is that a knowledge of the local lithology is imperative for the correct interpretation because sandstone, limestone, and dolomite cannot be accurately differentiated by the gamma ray evaluation alone. The second is that in some areas of very complex geology some sandstone and/or limestones have been discovered that are as high in radioactive material as the usually shale value. This phenomenon has occurred so far only in some Gulf Coast and California areas. At this writing none has been logged in the Mid-Continent fields.

Gamma rays are detected for well surveys by a subsurface instrument (Figure 1) containing an ionization chamber filled with an inert gas under considerable pressure. Gamma rays are extremely penetrating and, having been emitted from the radioactive element in the rock formation, will penetrate several inches of cement, steel or other metallic casings, borehole fluids and so into the ionization chamber of the recording instrument.

The presence of gamma rays in the inert gas of the ionization chamber will permit the gas to conduct an electrical current. This current is amplified by the amplifier in the sub-surface instrument, transmitted to the surface, further amplified and recorded by surface instruments.[2]

Passing through various strata gives a graphic picture of relative radioactive values plotted versus depth. This log (Figure 2) can be interpreted to determine the accurate thicknesses of the geological formations existing in the well.

Figure 2, for an illustrative example, is a portion of a well survey from Kansas. Here is shown the relationship of limestone, shaley limestone, shale, and dolomite under actual survey conditions. The dashed lines from the gamma ray curve to the lithologic column illustrates the point at which the tops of the strata should be picked. This point is the mid-point of the transition of the curve. At this point, the center of the ionization chamber is at the contact point of the formational change with one-half the ionization chamber in one formation, and the other half of the chamber in another formation. This instant is considered to be the most accurate point for interpreting the top and/or bottom of the formation.

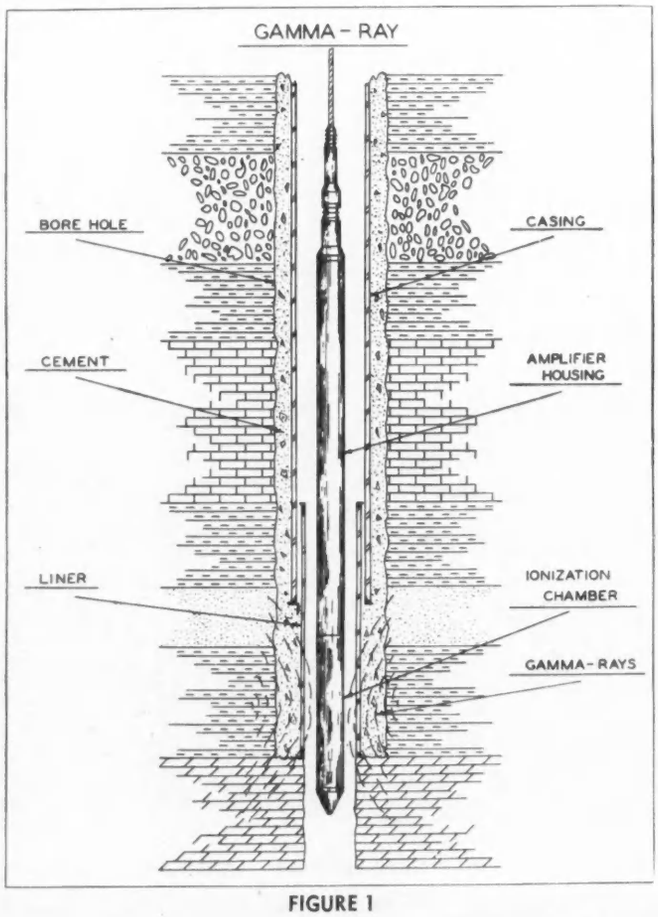

FIGURE 1

Gamma ray curves may be used alone to obtain reliable geological information, and for accurate correlation. Figure 3 is an excellent example of long-range correlation possible with gamma ray curves alone. This correlation is nearly 200 miles long, north to south, through the heart of Kansas and is made with only 13 logs, an average of only one log every 15 miles.

The many applications for gamma ray curves alone include:

1. Location of possible cased-off strata.
2. Measurement correction when other logs and drill-pipe do not agree.[3]
3. to clarify or confirm suspected anomalies.
4. Correlation for structural analysis.
5. Carnotite squeeze cementing.[4,5]
6. Location of radioactive material tracers.
7. Obtain accurate log in fluids that prevent ordinary electrical logs.

Part 2—Neutron Curves

Neutron well logging is the process of bombarding the strata, with a strong source of fast-moving neutrons and recording the secondary gamma rays which have been excited by the neutron bombardment. For a complete under-

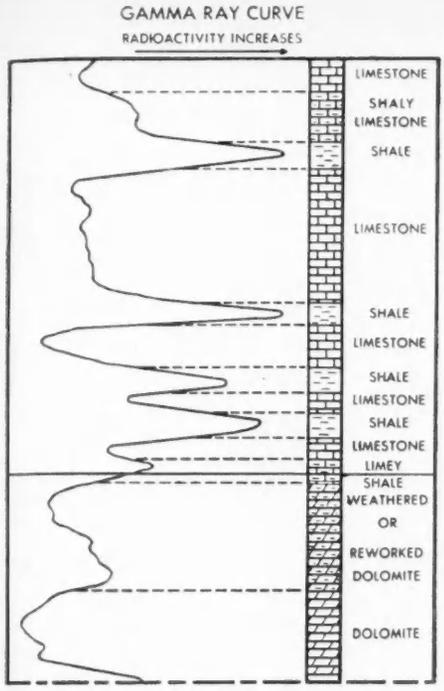

FIGURE 2

standing of the physical aspects of the behavior of neutron radiation in well olgging, reference is made to R. E. Fearon's publications.[6]

The Neutron curve might well be referred to as a fluid-content or hydrogen curve, since hydrogen is the controlling factor on the action behavior of the curve in well logging. Where hydrogen is present in the strata the curve is characterized by a low response—to the left of the graph; where there is no hydrogen, or very little hydrogen present, the response is quite high in value and is shown as a "throw"—to the right.

Neutron logging is accomplished very

TABLE 1

Lithologic Type	No. of Samples	Average-radio-activity in radium equiva-lents per gram X10-12
1. Black and grayish-black shale	40	26.1
2. Dark to black shales, neither calcareous nor sandy	74	22.4
3. Shales including sandy shales	164	16.2
4. Marls and limy shales, grayish-black and black	3	16.5
5. Sand and shale	9	13.5
6. Dark to black shales, not calcareous, but sandy	16	13.2
7. Medium to light gray shales, neither sandy nor calcareous	17	11.3
8. Siltstone	11	10.3
9. Medium to light gray shales, not calcareous, but sandy	18	9.0
10. Marls and limy shales, dark	10	8.8
11. Sandstones, silty but not shaly	26	7.3
12. Shaly sandstones	40	7.0
13. Marls and limy shales of light shades	16	6.8
14. All sandstones, including shaly sandstones	131	5.3
15. All sandstones, excluding shaly sandstones, but including silty types	105	4.0
16. Sandstones free from silt and shale	76	4.1
17. Shale-free limestones and dolomites	64	4.1
18. Microcrystalline to earthy limestones and dolomites of medium to light shade	28	4.0
19. Medium to light shade, shale-free limestone	33	3.8
20. Finely to coarsely crystalline limestones and dolomites of medium to light shade	24	3.1
21. Medium to light shade, shale-free dolomite	21	3.1
22. Effect of shade in shale-free limestone and dolomite:		
A. Light gray to white	30	3.1
B. Medium shade	22	4.1
C. Dark to black	10	6.1
23. Estimated original permeability of sandstone before cementation:		
Very high	35	2.9
High	37	5.1
Low	40	6.6
Very low	24	7.5

From "The Total Gamma Ray Activity of Sedimentary Rocks as Indicated by Geiger Counter Determinations," by W. L. Russell, in Volume IX, April, 1944, edition, Number 2, of Geophysics.

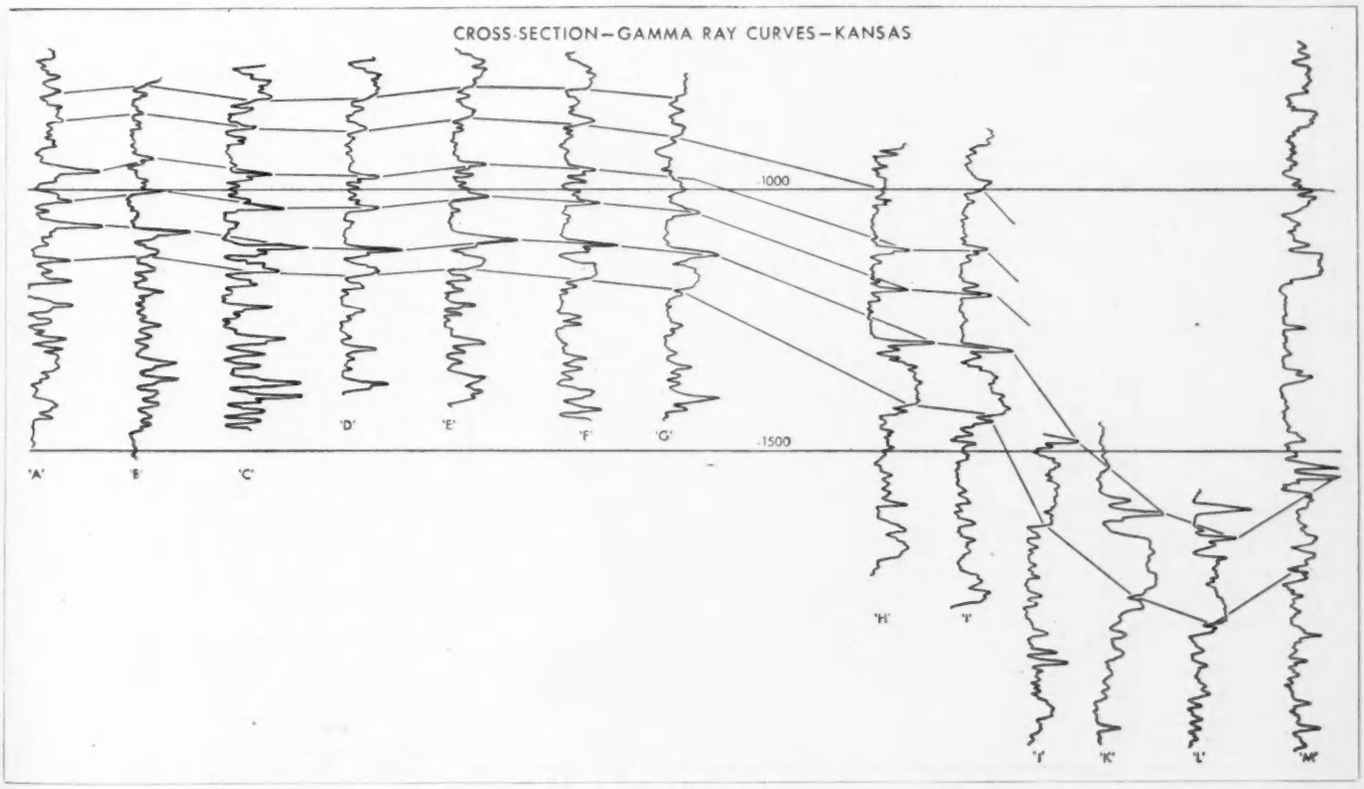

FIGURE 3

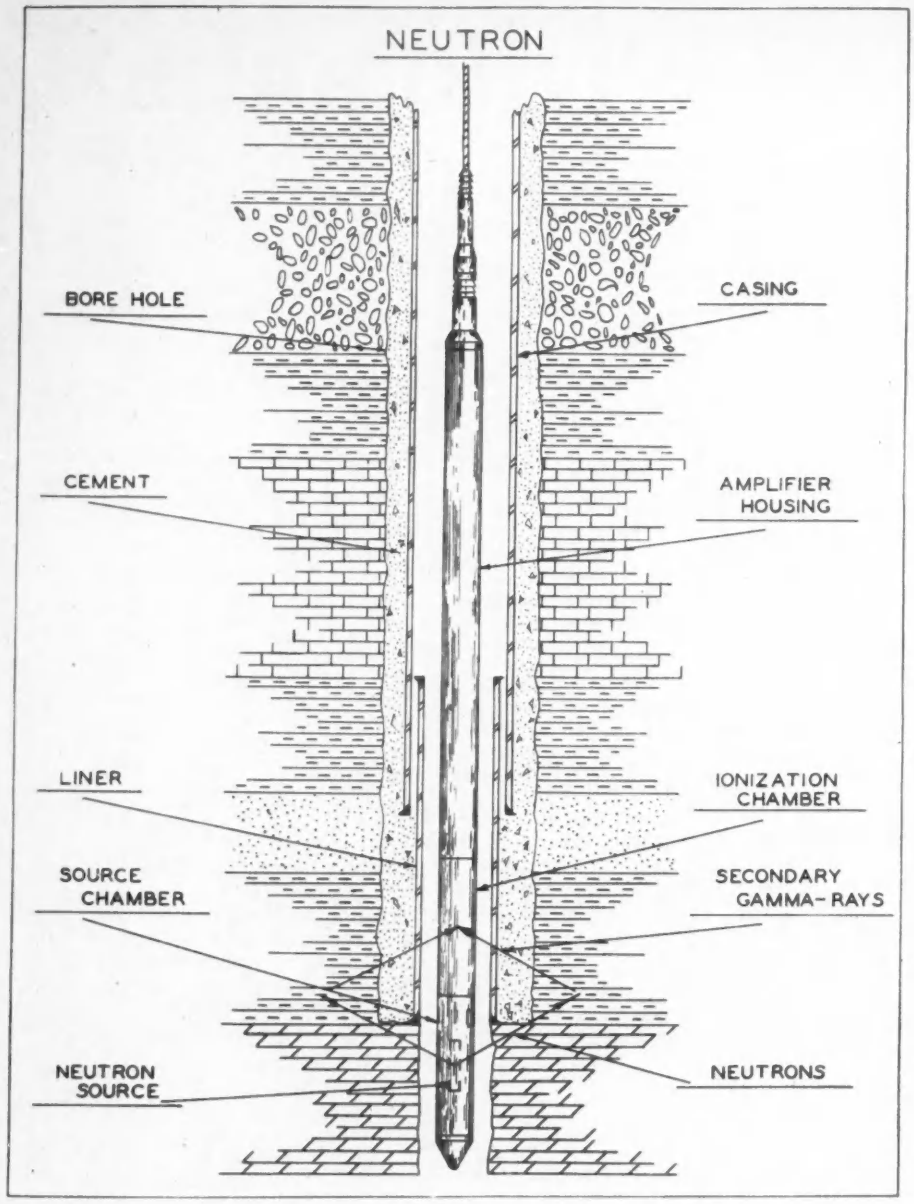

FIGURE 4

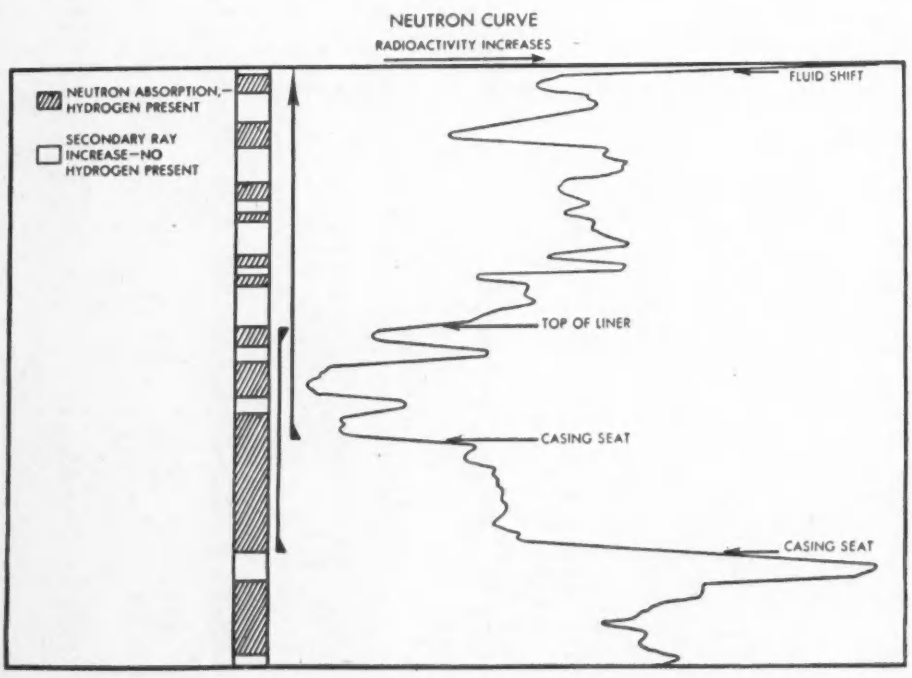

FIGURE 5

similarly to gamma ray logging. The same surface equipment is used, and the sub-surface instrument is very similar. Figure 4 represents a neutron sub-surface logging instrument, the bottom portion of which is named as a "source chamber." Contained in this chamber is a source of fast-moving neutrons. The strata is bombarded by these neutrons, and secondary gamma rays are created by atomic collision. These secondary gamma rays pass through the ionization chamber immediately above the source chamber, and in direct proportion to the amount of secondary gamma rays present a curve is plotted vs. depth. The neutron instrument is so constructed that it is not responsive to the natural gamma ray radiation emanating from the strata, and is only sensitive to the comparatively higher secondary radiation created by the neutrons.

As stated before, the response of the instrument opposite hydrogen is very low. It matters not in what form the hydrogen occurs—whether in oil, water, or shales—the curve is characterized by a low reading on the graph, to the left of the chart. For this reason, a neutron curve used *entirely alone* cannot be interpreted further than shown in Figure 5. One can only point out the presence or absence of hydrogen.

From this consideration the neutron curve would appear to be very simple in interpretation. The neutron curve alone is not a reliable means of determining geological formation; however, as a complementary curve to the gamma ray curve it permits a very detailed study and interpretation of the strata as will be discussed under Part 3.

Due to the high intensity of the neutron bombardment, the large amount of secondary radiation, and the shorter length of the detecting chamber, the neutron curve provides better definition of the thinner geological strata traversed, as well as the location of possible porous zones within the strata. The high sensitivity of the neutron curve to changes in bore-hole diameter and the shielding effects of casing and bore-hole fluids require careful consideration when interpreting formation, but are used to advantage in detecting the presence of these anomalies. Some of these conditions are represented in Figure 5, and have been explained at great length in previous articles. In one of these articles on this subject, A. B. Winter[7] outlined a table of physical well conditions and the effect recorded by the neutron curve. Table 2 is reproduced here to aid in interpreting the neutron curve.

As a general summarization, the neutron curve used alone is limited in scope. Interpretation is confined to showing the presence of hydrogen in the stratum, the absence of hydrogen in the stratum, or the accurate location of physical conditions within the well. Should the well operator be firmly convinced of the location of his producing stratum, and is desirous only of locating porous zones within that stratum, then a neutron curve alone may be justified. However, the additional information obtained by using both curves in a combination log more than offsets the small difference in cost.

Part 3—Combination Radioactivity Logs

The fundamentals of obtaining and interpreting each curve individually have been demonstrated in Parts 1 and 2. This section considers the two curves used as a combination radioactivity log and the general interpretation of this log. Our purpose can best be accom-

plished by using an actual well log rather than an idealistic log. Figure 4 is a log from a northwestern county in Kansas, and in the figure we have divided the lithologic column into four columns, numbered one to four for purposes of explanation.

Taking a straight edge in hand we can begin by a basic interpretation of the gamma ray curve. Since it is known that an increase in radioactivity is indicative of an increase in silt or shale, and that this is represented by a throw to the right on the curve, it becomes a simple matter to go through the log marking what is believed to be shale. This is shown in Column 1, Figure 4. The tops and bottoms are here picked as near the center of the traverse of the curve.

Now that the shales have been indicated we need to name these formations that are represented as being low in radioactivity on the log. It has been stated previously that a knowledge of the local lithology is imperative for interpretation. At this point we call upon this knowledge. In this case the well is in Ellis County, Kansas, and recognizing the black Heebner shale by the very extreme throw to the right, it is a simple matter to progress down Column 2 from the Heebner shale through the Toronto limestone, Douglas shale, Lansing-Kansas City limestone, Marmaton shales, and the Arbuckle dolomite. This example is naturally a local one, but the same procedure can be followed anywhere in the world. It serves to illustrate the need for local lithological knowledge to correctly identify the formations traversed.

We have by this time completed the geological interpretation possible with the gamma ray curve. Now, projecting our straight edge across the log to include the neutron curve, we assay the log once more in order to confirm or correct our tops. It will be remembered that due to the high intensity of neutron bombardment, large secondary ray response, and the shorter ionization chamber length, the neutron curve gives us a more definite "break" on tops of strata. Also, since hydrogen is contained in shale, both in connate water and chemically combined water, shales should respond on the neutron curve as a near mirror image to the response of the gamma ray curve. There are several excellent examples in Figure 6, the Heebner shale just above minus 1200 being one of the best. The corrected and final lithological column is shown as Column 3, Figure 6.

Satisfied that our geological determinations are as nearly correct as possible, the procedure now is to interpret the remaining portions of the neutron curve. When both curves are showing low response, that is, to the left on their respective graphs, the log is interpreted as a possible porous section in a possible producing strata, and such zones are indicated by the diagonally cross-hatched symbol in Column 4. Since hydrogen has an absorbing effect on the neutrons emanating from the source chamber, secondary ray recovery is very small opposite fluid bearing strata and this condition is reflected on the log as a low response curve. By the same token, when no hydrogen is present in the strata, curve response is very high and these portions are considered as being very dense.

Hydrogen is present in strata under various conditions such as oil, gas and water. No attempt is made by the radioactivity log to differentiate between

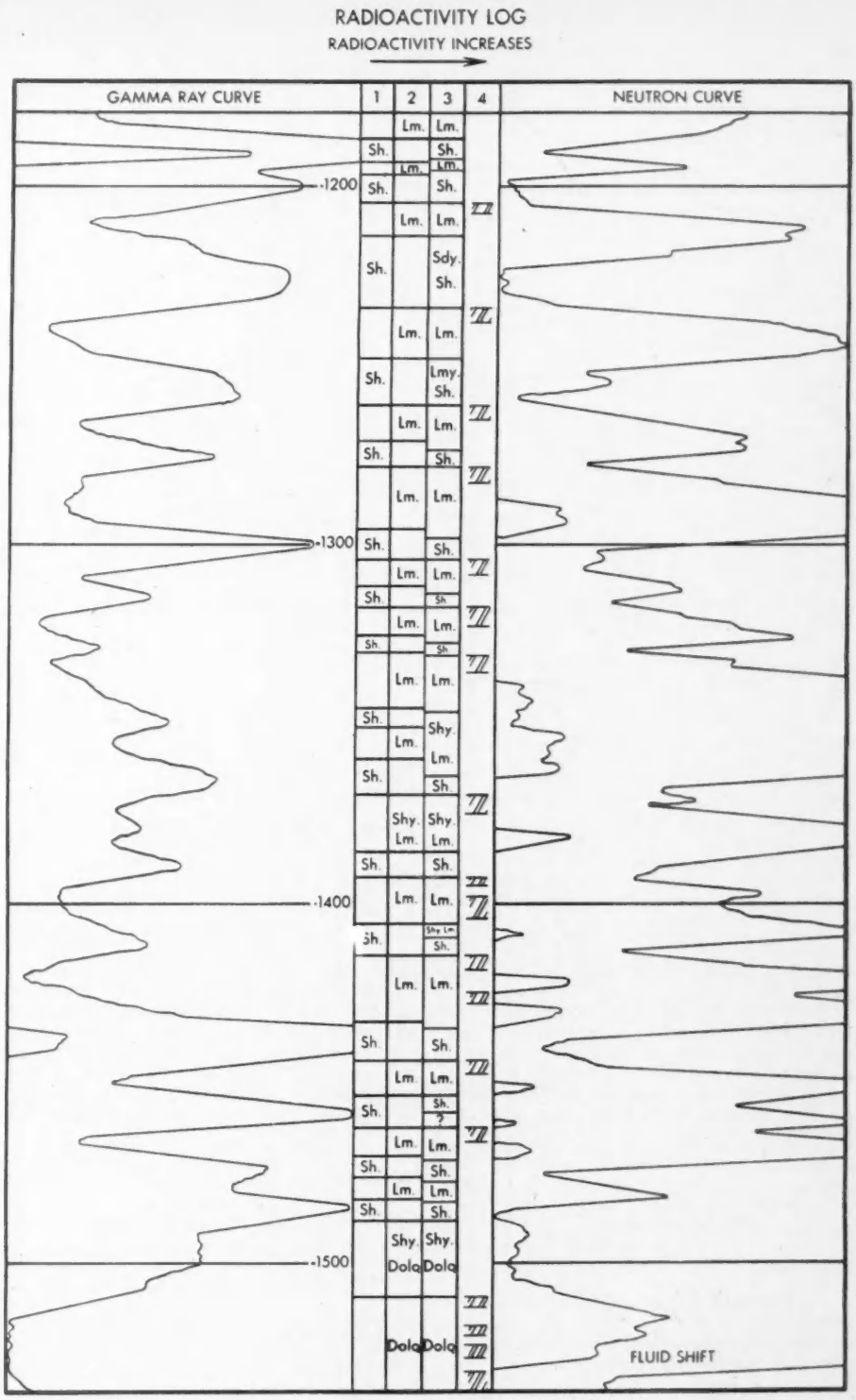

FIGURE 6

these conditions. At some future date perhaps a method will be formulated for interpreting oil, gas, water, etc. However, correlating with other information existing on the well surveyed, or nearby wells, with the radioactivity log, one can easily determine if the well is structurally favorable, and the porous zones are of the proper magnitude to test the well for possible production.

A very excellent example of such information correlated with a radioactivity log is shown in Figure 7. The illustration is divided into three frames for clarity, to the left is the radioactivity log reproduced as it was originally interpreted in the field. In the center is the core analysis obtained by the operator, and to the right the radioactivity log is superimposed upon the core analysis. Also included in the right frame of Figure 7 are the production tests made by the operator. Examples such as this represented here attest to the accuracy of the radioactivity log, and it is also representative of some of the research and study that is being carried on con-

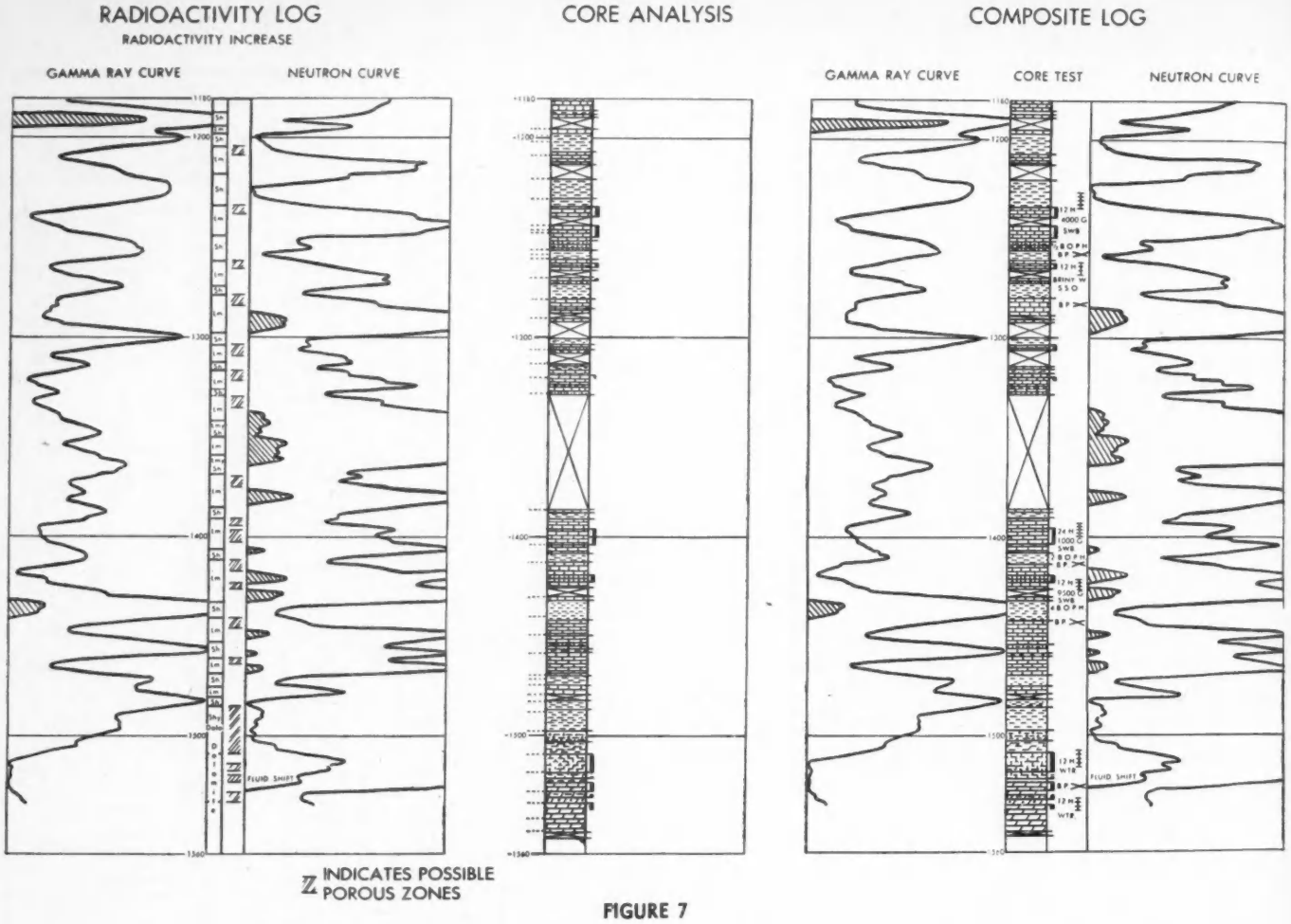

FIGURE 7

tinuously to improve and confirm the radioactivity log.

Reference has been made on occasions regarding radioactive limestones and sandstones occurring in regions of complex geology. These are usually said to be of a response value equal to shales on the gamma ray curve, but react as sands or limestones on the neutron curve. Conditions such as outlined should be approached with caution, and the determination of radioactive sands or limestones substantiated by core analysis. In Figure 7, at a depth of approximately minus 1460 feet is a zone interpreted on the original radioactivity log as a shale. It will be noted that the gamma ray curve is very high in response, and the neutron curve is also quite high with two short "throws" back to the left or low side. This condition is mistakenly interpreted as a shale—it can well be mistakenly called a radioactive limestone! Fortuntaely, we have a core recovery from this point which correctly identifies the strata as a very thin black highly radioactive shale overlaid by a two foot limestone and that in turn is overlaid by a thin grey shaly limestone. Evidently the gamma ray curve has been affected by the radioactive material in the black shale and shaley limestone, to the point of obliterating the thin limestone. However, the shorter ionization chamber, and sensitivity of the neutron curve has correctly logged the strata.

TABLE 2

Physical Features of Well and Their Effect on Neutron Curve
(Log recorded coming out of hole)

DESCRIPTION OF FEATURE	DIRECTION AND MAGNITUDE OF SHIFT
(1) Entering a casing string from open hole.	Shift to left and reduction in curve sensitivity.
(2) Entering a second outer string with no change in inside casing.	Moderate shift to left and reduction in curve sensitivity.
(3) Leaving the top of a liner.	Shift to right and increased sensitivity.
(4) Fluid level inside casing.	Very large shift to right and increased curve sensitivity.
(5) Oil-gas contact or water-gas contact (fluid level) in annular space between casing strings, or between casing and walls of borehole.	Large shift to right, but smaller than shift as in No. 4.
(6) Increase in hole diameter with no change in amount of casing, with hole full of fluid.	Moderate shift to right.
(7) Increase in hole diameter, with no change in amount of casing, with dry hole.	Much larger shift to right than No. 6.

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[2] Robert E. Fearon, "Radioactivity Well Logging," Part One, The Oil Weekly, June 4, 1945.

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[6] Robert E. Fearon, "Radioactivity Well Logging," Part Two, The Oil Weekly, June 11, 1945.

[7] A. B. Winter, "A New Application for the Neutron Log," "Tomorrow's Tools Today," Vol. 10, No. 4, 1944.

(This article will be concluded next week)

Suspended Matter

In Flood Water

ONE of the most important requirements that oil field flood water must meet to effectively flood an oil sand, is to be free of suspended matter. The importance of this requirement is self-evident when it is realized that injection and movement of water into the oil is responsible for the movement of the recovered oil to the producing well bore, and accordingly, any detrimental factor which interferes with uninhibited entry and migration through the oil-bearing sand must affect ultimate oil recovery in proportion to the amount of interference.

When the relative areas of the exposed sand in the well bore and the advancing flood front are considered, it is easily illustrated that hindrance of water entry at the well bore to any degree strongly affects the velocity of the flood movement in the sand. It is easily appreciated that continued deposition of suspended matter in an input well bore can only result in a partial sealing of pore spaces in the exposed sand face, thereby decreasing injection rates, regardless of the pressure applied. Over a period of time this plugging, or sealing action, may result in a nearly complete closure of entry pore space before all recoverable oil is obtained. An example of this action is illustrated in Figure 1.

Suspended matter in flood water is present due to (1) being in the untreated raw water supply; (2) resulting from aeration; and (3) resulting from corrosion of pipe lines in the distribution system.

Suspended matter in the raw, untreated water supply being used for flooding operations is organic matter, sand, silt, other foreign matter, etc., and is usually referred to in water analysis as turpidity and color. Suspended matter may be broken down into two classifications, as "sediment" which will rapidly settle out, and "turpidity" which slowly settles out. However, nearly all forms of suspended matter are usually referred to as turpidity. Color of the water also is related to suspended matter in that it is almost invariably due to organic matter usually extracted from decaying vagetation.

Color Treatment

Suspended matter, or turpidity and color, are present in nearly all waters and may be taken out of the water by coagulation, settling and filtration. Deep well and spring waters are usually quite free of color, but surface waters and shallow wells usually have appreciable color. Inasmuch as most flood water supplies are from one or the other of these two latter sources, color treatment may be required.

Turpidity concentration varies, as does color, depending upon water source. Turpidity is usually absent in ground waters, except in shallow wells; however, it may be present in surface waters in concentrations ranging from less than one part per million to nearly 30,000 parts per million. Surface waters lowest in turpidity are those fed by underground sources, while those highest in turpidity are those streams carrying a high sand, silt or mud concentration. Turpidities in rivers, lakes and surface streams vary considerably from day to day or season to season. As may be seen, it is advisable, if the alternative is available, to consider the cost of suspended matter elimination in selecting a raw water supply.

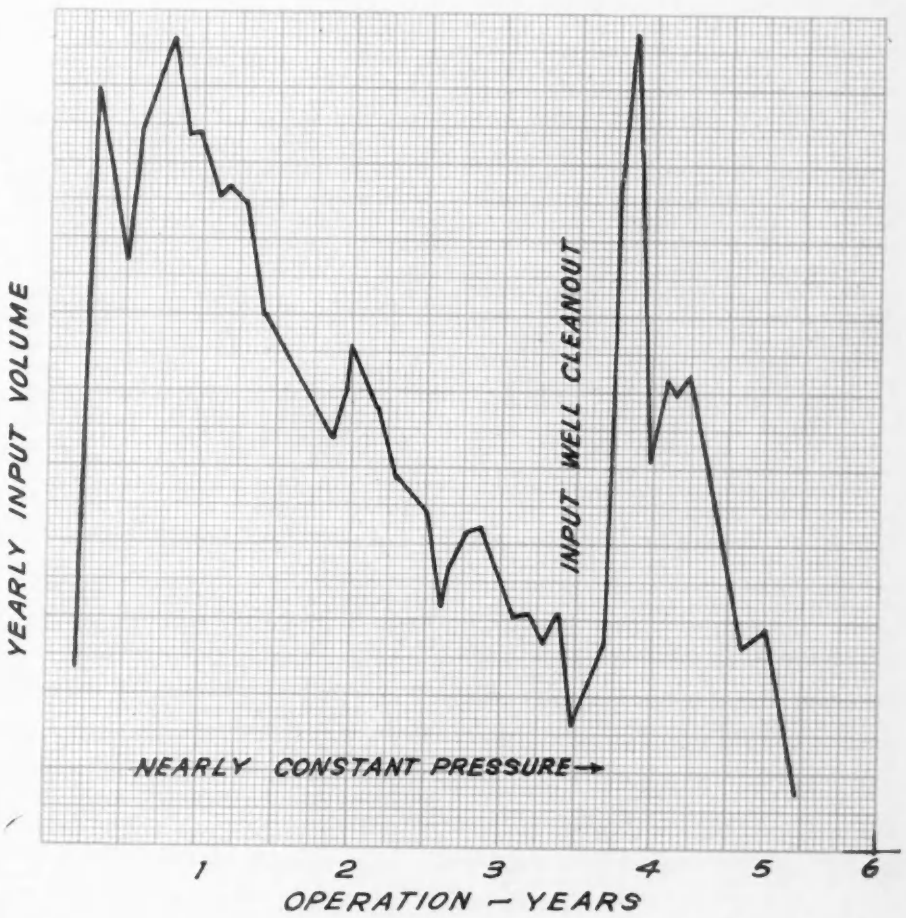

FIGURE 1

Suspended matter, which is formed as a result of aeration, unless removed by coagulation, settling and filtration is usually very troublesome. Unless handled in a closed system, water aeration will result in the precipitation of suspended matter. However, since aeration is usually resorted to for removal of iron and manganese, suspended matter formed by this action is usually anticipated, as it is generally an integral part of many treating programs. Usually, iron is found in raw waters in the form of ferrous bicarbonate which may be clean and odorless when first sampled but eventually deposits a reddish brown sediment after being exposed to the air.

Unless effectively removed by settling and filtration or base exchange, this type of matter will prove very troublesome as a well bore "sealer" and will possibly prompt a considerable amount of input well cleanouts to maintain a sufficient water input rate.

Aeration is also resorted to as one method of manganese removal, which is exceedingly troublesome in causing deposits in piping and favors the growth of clogging manganese crenothrix.

Since aeration is sometimes resorted to for removal of troublesome chemicals compounds as outlined, its end result or formation of suspended matter will of course be anticipated and effectively

coped with by settling and filtration. Observation of the back flowing of water input wells and lines on a property using an improperly handled water should convince the most inexperienced that removal of suspended matter is definitely required. Occasionally, waters having the color and appearance of tomato ketchup are witnessed.

Applying Coating

Suspended matter present in the raw water supply, or due to aeration, is usually not troublesome in flood water treatment since it is anticipated and controlled. However, the third general classification, or source, of suspended matter which is a product of corrosion in distribution or piping systems, is not so easily eliminated. Its prevention usually requires a coating on the inside of the piping system. This coating may be applied artificially in the form of cement or other types of coating applied at the mills, or it may be formed by treating the flood water in such a manner as to cause the water to deposit its own protective coating on the pipe walls.

Deterioration of artificial coatings due to wear or injury to the coating when installing makes the complete protection afforded by chemical treatment very attractive. The attractiveness of this treatment to form a thin protective pipe coating is emphasized when it is remembered that in many flood projects plain piping already in use on the lease may be used for distribution, the replacement of which might place the project under an economical handicap.

Prior to prescribing the chemical treatment necessary to prevent corrosion and formation of suspended matter in distribution systems, the operator should be acquainted with causes of corrosion and their prevention.

Briefly, the most important causes of corrosion are dissolved oxygen, dissolved carbon dioxide, alkilinity and pH of water and the character of dissolved salts.

The corrosive action of dissolved oxygen in the water is strongest when first brought in contact with the piping; however, other corrosive factors assume stronger importance as corrosion proceeds.

As may be witnessed, hydrogen is liberated when iron dissolves, or is corroded in water. If undisturbed this oxygen film would serve as a corrosion preventative, but all natural waters contain oxygen which unites with the hydrogen film to form more water, thereby exposing the clean corroded pipe surface again. However, this clean surface is then coated by the corrosion precipitate, forming a film on the pipe which may or may not be resistant to further corrosion. The very permeable ferric hydroxide film formed as a result of corrosion by low pH value acidic water permits penetration by fresh water and a continuation of the corrosive action on the metal surface beneath the ferric hydroxide film. This secondary corrosion forms pits and turbercles which build up as obstacles to fluid flow in the piping and eventually break off, thereby exposing a fresh metal surface for continued action.

Accordingly, to form a corrosion protective film on the piping it is necessary to have a sufficient quantity of low solubility compounds, such as calcium carbonate, in the water which are precipitated by the corrosive action and form a permanent corrosion proof coating.

Nearly all ground waters contain a certain amount of calcium carbonate, usually present as a bicarbonate. Being in this form, it is held in solution by carbon dioxide and as carbon dioxide content of the water varies, so may its bicarbonate concentration.

In order that the calcium carbonate may form a protective coating, it is necessary that the water be saturated, or nearly so, with the compound. Usually, it is necessary to add lime to the water to reach this solubility equilibrium.

It must be remembered that only a thin film is required to prevent corrosion and that time dosages must be carefully controlled, else supersaturation will occur with the resulting precipitation of calcium carbonate in the water stream in the form of suspended matter.

The amount of treatment is determined by daily, or so pH and aliklinity tests. In adding lime to the water it is necessary to assure the lime going into solution by agitation and retention time in the mixing chamber.

Though this method of treatment has been successfully used for many years by municipalities, flood water treatment requires much closer limits be applied to the treatment, since haphazard lime dosages may prove nearly as harmful as no treatment at all.

From the foregoing it may be evident that elimination of suspended matter from flood water, whether due to being present in its raw, untreated stage, or resulting from aeration or corrosion, is a prime necessity for maximum economical oil recovery from a flood project, and the cost of eliminating corrosion and suspended matter from the water is negligible, as a rule, compared to possible material maintenance expenses and the value of oil reserves and material involved.

Patent Roundup

A Regular Feature of
THE OIL WEEKLY

Patents recently issued by the United States Patent Office, Washington, D. C., include those listed below.

Printed copies of the patents listed are furnished by the Patent Office for 25 cents per copy and can be had by addressing the Commissioner of Patents, Washington 25, D. C.

Purifying Field Waters

Harold Schiller, Los Angeles, and Abraham Shapiro, Monrovia, Calif. have assigned this patent (No. 2,407,180) designed to purify oil field waters, to Socony-Vacuum Oil Company, New York.

The oil field water containing clay suspended petroleum is passed by controlled flow through a bed composed of granules of ferrous sulfid (FeS) where the petroleum is transferred from the clay suspension to the granules. The substantially oil-free clay particles are passed from the out into suspension in the effluent water, so that the petroleum is retained in the bed.

Flow Wing

This flow wing device, No. 2,407,050, has been patented by Herbert Allen and Ruric N. Bean, Houston, and assigned to Cameron Iron Works, Houston.

The flow wing has a body which carries a flow bean retainer. The means to adjustably support and position the retainer in the body include a floating gland and packing, the gland being threaded to the retainer and slidably but non-rotatably mounted in the body abutting the packing.

Communication in Pipe Lines

This patent No. 2,407,299, by Edward W. Smith, Melrose, Mass., works as follows:

Compressional wave vibrations are transmitted along a pipe line by a means which consists of a mass formed in a collar about the pipe, in which mass are positioned a plurality of magnetostrictive rods, with a means for exciting them to electrical transmission.

Orifice Plate Carrier

This device (No. 2,407,951) for measuring pipe line flow has been patented by Paul P. Daniel, Los Angeles, and is unassigned.

The plate carrier is adapted to be positioned in a flow line and carries an orifice plate within an opening through the plate, a sealing ring interposing between the plate and carrier within the opening. The sealing ring is internally grooved to receive the outer edge of the orifice plate and is of an external diameter to fit freely the carrier opening, the sealing ring being of a thickness greater than the thickness of the carrier.

Rotary Pump

This pump was patented (No. 2,406,959) by Dwight H. Millard of Norwalk, Calif., and is unassigned.

A hydraulic pump consists of a housing containing a motor means for rotating a tubular impeller member with an inlet opening and a gear adjacent to an end. A rotatable complementary impeller member within the tubular impeller member has a driving gear engageable with an idler gear which is mounted on a bracket formed by a web member. The idler gear bearing bracket has a fluid passage registering with the tubular impeller member inlet opening, the latter member having a spiral internal blade adapted to direct fluid toward the inlet opening.

Age of Patents Shown

Invention, Inc., patent research organization, has issued a pocket-sized booklet, "Telling the Age of a U. S. Patent by Its Number," which contains a dated tabulation of the numbers for patents, reissues, designs and trademarks from 1836 to 1946, so that the age of a patent may be determined at a glance. U. S. patents, numbered consecutively, are now being given numbers in the two-million, four-hundred-thousands. The folder is free and may be obtained by writing to Invention, Inc., Munsey Building, Washington 4, D. C.

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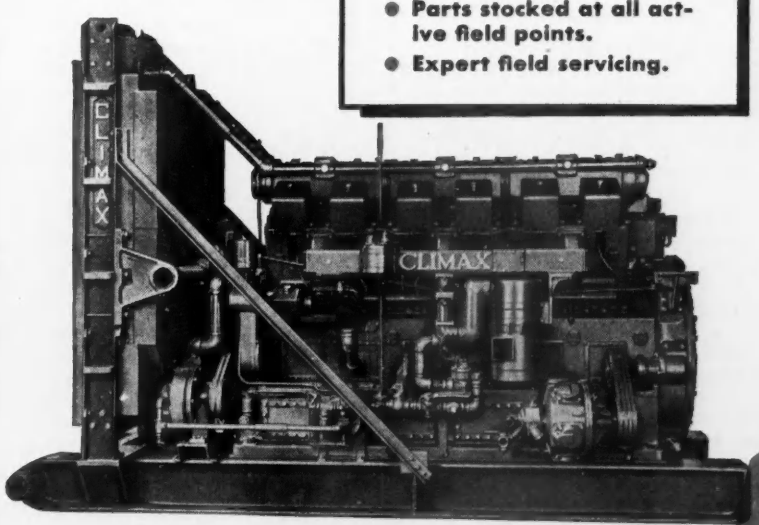

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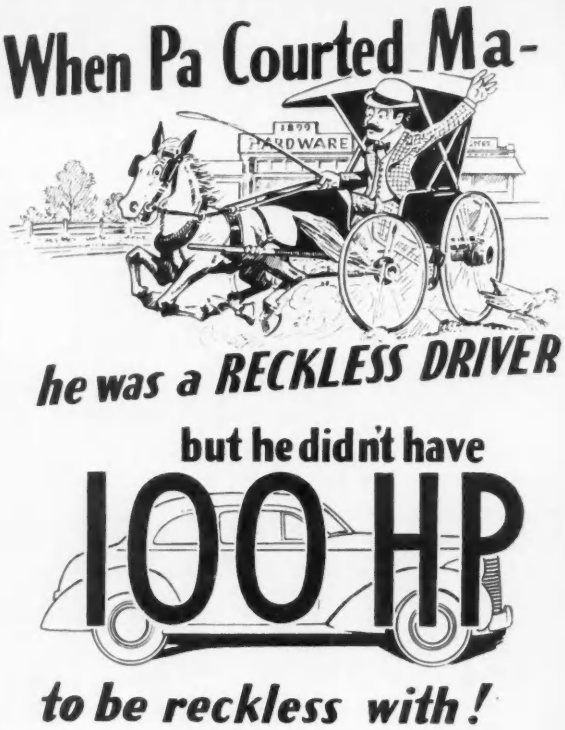
Accident Prevention

Part 11

Safety in Fleet Operation

By C. L. HIGHTOWER
Safety Director, United Gas Pipe Line Company
and Union Producing Company



THE control of accidents in fleet operation is dependent upon three basic factors:

1. Selection of applicants who are physically, mentally and temperamentally qualified to develop as drivers.
2. Thorough and accurate training of drivers in the proper care of the vehicle and in defensive driving practices.
3. Proper maintenance of vehicles to guard against mechanical failures.

The methods best suited for interviewing, testing and selecting drivers are usually determined by operating conditions. Where operations are concentrated and drivers are employed through a central location, it is both practicable and possible to set up the necessary equipment and make use of established and accepted tests to determine the applicant's reaction time, excitability, depth perception, and other characteristics which might have a bearing on his ability to develop as a competent driver. Where operations are scattered and driver applicants are interviewed and selected by operating supervisors at widely scattered points, it is not practical to provide and use elaborate testing equipment. Careful interviewing and actual road tests will, however, eliminate a large percentage of unfit applicants.

Test Requirements

Under all circumstances minimum test requirements should include:

1. Physical examination by a qualified physician with special emphasis on visual acuity, nervous tendencies and predisposition to instability or excitability.
2. Vehicle test in garage or on the road. The vehicle test in the garage will give some idea of applicant's knowledge of the equipment and his mechanical aptitude while an actual road test under the careful guidance of the operating supervisor will give some indication of the driver's experience and reveal his knowledge of driving rules and highway courtesy.

There are two distinct phases of driver training. The first is initial or "breaking-in" training; and the second, continuous training to keep the driver informed of new changes in vehicular equipment, material or equipment handled, change in routes with varying traffic conditions, and new driving rules and techniques. Continuous training is also necessary to refresh the driver's mind on existing driving hazards and to keep him alert to his responsibilities.

Initial Training

Initial or breaking-in training is a problem of individual instruction and should follow the four primary training steps: preparation, presentation, performance and followup. This instruction job should be done by an experienced trainer, the supervisor or an experienced driver delegated by the supervisor. Defensive driving should be explained and emphasized during the initial training period, and specific instruction on rules of the road and safe driving practices under all anticipated conditions should be fully outlined. Written material furnished the driver, such as the driver's manual, should be discussed by the instructor and the worker tested as to his knowledge of the material covered.

Group safety meetings can be used effectively for carrying on a continuous training program. Periodic meetings should be held with all drivers at terminals or junction points where a representative group can be called together. Such meetings may be held with groups of ten to 50 drivers. With less than ten the discussion may be limited and with more than 50 the meetings become unwieldly and opportunity is not afforded for full participation of individual members.

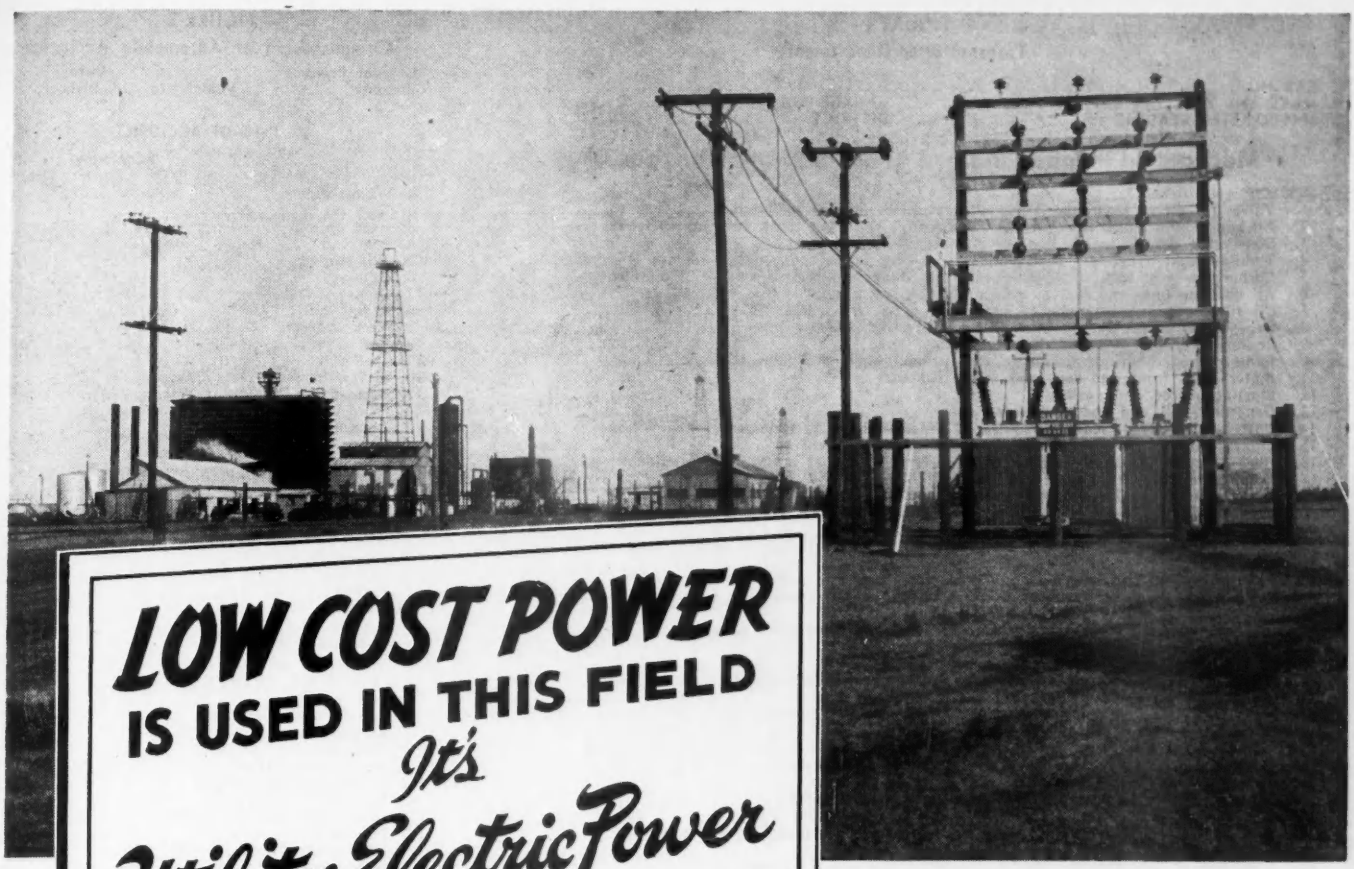
The program for such meetings should feature specific, every-day operating problems rather than general and abstract subjects. In planning the meetings the thought should be kept in mind that the objective is to train the individual driver in correct driving practice so that he will be a safer and more efficient operator. Proper care and handling of equipment and personal protection against accidents have a place on the program along with rules of the road and driving courtesy.

Visual educational methods and driver participation should be considered in arranging the programs for the meetings. Film strips and moving pictures on safe operation of cars and trucks are effective visual training aids. The blackboard may also be used to good advantage in illustrating unsafe driving practice or to show the cause of an accident. This is one visual aid that is simple to use, inexpensive and easily adapted to any problem or situation.

Conference Method

The conference method of discussing a subject is the best assurance of getting active participation of the entire group. A skillful discussion leader or chairman can draw out the individual drivers by asking direct questions or calling for comments and suggestions.

Following is a typical outline that might be used in developing a conference discussion on traffic safety. In using this type of outline the leader puts the problem to the group, lists the appropriate subject heading on the blackboard and calls on the group for their ideas and suggestions. These suggestions are listed as they are given and after discussion is exhausted under the first heading, the chairman follows the same procedure in developing the list under the second subject heading. The chairman or leader may then sum up the discussion, stating the problem, out-



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For an actual dollars and cents breakdown of what it will cost you to lift a barrel of oil, call the Power Engineer of your local Utility Electric Power Company. He will be glad to furnish you with the figures . . . at no cost.

Use Utility Electric Power!

PETROLEUM ELECTRIC POWER ASSOCIATION

Box 1498, Oklahoma City, Oklahoma

FIGURE 1

Transportation Department

CAR NO. ..... DATE .....
MAKE AND TYPE ..... GARAGE .....
SPEEDOMETER READING ..... DISTRICT .....

Mechanical Inspection Card • Company Garages Only

INSPECT AND ADJUST:	Check
1. Valves for proper clearance if needed—check valve cover for oil leak	☐
2. All bearings in motor if needed and inspect oil lines and crank case for oil leaks	☐
3. Distributor—check points, replace if needed—oil breaker	☐
4. Timing—tighten cylinder head bolts—clean and adjust spark plugs; replace if needed	☐
5. Carburetor—test with combustion analyzer (if possible); clean and refill air cleaner	☐
6. All gasoline lines and fuel pump for leaks, check gauge	☐
7. Oil filter—change cartridge if necessary—check filter lines	☐
8. Fan—adjust or replace fan belt if necessary	☐
9. Radiator for leaks—flush often in summer time	☐
10. Radiator hose and clamps—repack or overhaul water pump if necessary	☐
11. Motor bolts front and rear and motor supports	☐
12. Starting motor and switch	☐
13. Generator—oil and check charging rate	☐
14. Battery for water—clean terminals and grease—check battery carrier and voltage	☐
15. Lights—dim—bright—stop—dash—tail—clearance and wiring	☐
16. Horn—speedometer and cable—replace if broken and set up to correct mileage	☐
17. Hood fasteners and oil same	☐
18. Remove front wheels—inspect bearings, spindles and bushings	☐
19. Brakes—(Service)—adjust or reline if necessary—hydraulic refill—and check lines	☐
20. Brake—(Emergency)—adjust or reline if necessary	☐
21. Clutch—check pedal clearance on floorboard	☐
22. Clutch throwout collar for noise	☐
23. Steering system throughout including tie rod, drag link and wheel alignment	☐
24. Front and rear springs for broken leaves and looseness in shackles, clips and U bolts	☐
25. Radius rods front and rear	☐
26. All shock absorbers and knee action units—refill and adjust if necessary	☐
27. Universal joints, boots, and drive shaft	☐
28. Transmission for noise and leaks	☐
29. Differential for noise—tighten rear axle nuts—check inspection plate for oil leaks	☐
30. Tighten all lug and hub bolts	☐
31. Body bolts—door hinges—screws and door locks and lubricate	☐
32. Tighten down floor boards	☐
33. Windshield wipers, oil or repair if necessary	☐
34. Rear view mirror and clearance reflectors (replace if needed)	☐
35. Running board brackets	☐
36. Fender brackets—fenders, straighten and weld if necessary	☐
37. All glass—doors, windows, windshield (state below if any broken)	☐
38. Condition of paint—good ( )—fair ( )—poor ( )—replace signs if necessary	☐
39. Condition of top—good ( )—fair ( )—poor ( )	☐
40. Condition of upholstering—good ( )—fair ( )—poor ( ) repair if needed	☐
41. Condition of tires—good ( )—fair ( )—poor ( )	☐
42. Is First Aid Kit in car—yes ( )—no ( ) Refill First Aid Kit if necessary	☐
43. Is this car equipped with governor—yes ( )—no ( )—Set at what speed ..... M.P.H.	☐
44. Is this truck equipped with flares—yes ( )—no ( ) (Check oil in flares)	☐
45. Tools—jack and handle, crank, lug wrench and pliers	☐
46. Is this truck equipped with Fire Extinguisher—yes ( )—No ( )	☐
47. Is this truck equipped with Flags—yes ( )—no ( )	☐
48. Road Tested by	☐

Note: This Instruction Card to be Used in Company Garages Only.

FIGURE 2

Circumstances of Automobile Accident

Name of Driver ..... Date .....
Company ..... Vehicle No. ..... District .....

A. TYPE OF ACCIDENT

	Company Car	Other
1. We hit them		
2. They hit us		
3. Head on		
4. Rear end		
5. Side-swiped		
6. Ditching		
7. Up set		
8. Pedestrian		
9. Motor Vehicle		
10. R. R. Train		
11. Trolley		
12. Bicycle or Motorcycle		
13. Horse-drawn Vehicle		
14. Fixed Object		
15. Animal		

B. MOVEMENT OF VEHICLE

1. Turning Right
2. Turning Left
3. Going Straight Through
4. Slowing Down or Stopping
5. Backing
6. Parked
7. Skidding
8. Passing
9. Standing

C. ACTION OF DRIVER

1. Too Fast for Conditions
2. Reckless Driving
3. Inattention
4. Drove Out of Line
5. On Wrong Side of Road
6. Cutting in or Crowding
7. Passing Standing Street Car
8. Passing on Curve or Hill
9. Passing on Wrong Side
10. Failed to Signal
11. Improper Turning
12. Failed to Observe Stop Sign
13. Disregarded Officer or Signal
14. Disregarded Warning Signs
15. Drove Off Roadway
16. Drove Through Safety Zone
17. Double or Prohibited Parking
18. Following Other Car Too Close

lining the conclusions reached, and pointing out the action to be taken to correct the situation.

Traffic Safety

Problem 1. What can the individual driver do to insure that his vehicle is mechanically safe?

(Note to chairman: Have group give defects first and list these on blackboard under left column heading, then take up each defect and have group suggest how it might be detected and corrected.)

Mechanical defects that cause accidents	How to detect and correct these defects

Problem 2. What are the more common causes of traffic accidents, and what defensive driving practices can be employed to guard against these hazards?

(Note to chairman: Follow same plan of developing left column first and second column last.)

Unsafe acts of drivers and pedestrians which cause accidents	Safe practices to follow in order to overcome these hazards

A variety of conference headings may be used, depending on the problems of the group and the nature of the accidents which they are experiencing. A limited number of additional headings are given below:

Cause of backing accidents	Remedy

Under what conditions should speed be reduced?	Why?

What items should driver check before starting a trip?	How should check be made?

Causes of personal injuries involving drivers	Remedy

The control of accidents caused by mechanical failure of equipment is dependent upon periodic inspections and an adequate program of preventive maintenance. Like the oiler in the engine room, the driver should be constantly alert and observant for signs or symptoms of defects and unusual wear and make the necessary adjustments or repairs before serious mechanical failure results. In addition, the equipment should be subjected to a complete and thorough inspection by a competent mechanic at frequent and stated intervals in order that the condition of spindles, steering mechanism, and all other vital parts that cannot be checked by a casual inspection of the driver may be accurately determined.

An inspection guide similar to the form shown in Figure 1 will be found especially helpful to the mechanic in making this check. Such a list insures that no vital part will be overlooked.

Investigate Always

In any phase of accident prevention corrective action must be based on accurate knowledge of accident facts. Investigation of every vehicle accident is necessary in order to develop the circumstances surrounding its occurrence and to properly determine the cause factors. The question of who makes the investigation is relatively unimportant. This may be the responsibility of the supervisor in charge, a committee or the safety engineer. What is important is that all the known facts relative to the movement of the vehicle involved, the action of the driver, condition of the road, weather conditions, etc., are accurately known. An accident report form which provides for this information will be found helpful in securing all the pertinent facts. Figure 2 shows a typical supervisor's investigation report form.

Periodic tabulation of this information for given periods of from one month to a year will materially assist in analyzing unsafe driving practices and the information thus developed can be useful in the driver training program.

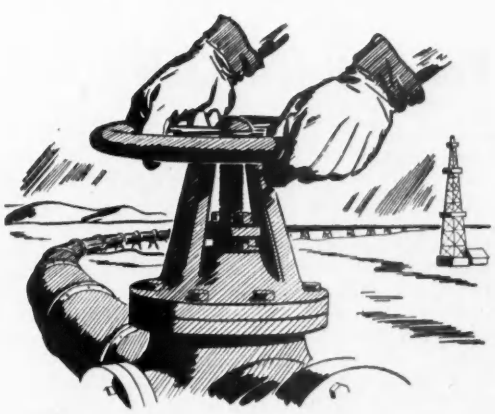
Looking Around

By THE OBSERVER

NO GOLDEN SPIKE, BUT A MIGHTY BIG BLACK SPLASH

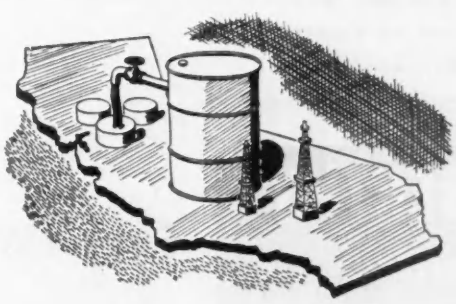
The ceremony of opening a new crude oil pipe line for business isn't spectacular. No floral horseshoes. No golden spike. Somebody hollers, "Let 'er go!" and a man in overalls twists a gate valve. And there, with a boost from some husky pumps, goes the black, writhing oil on its way.

That's what happened recently at Kettleman City and Coalinga. Two and a half days later, the first of the oil arrived at Los Medanos on Suisun Bay, 176 miles away.



What's important, if not spectacular, is that from now on the light crudes of southern San Joaquin, Kettleman and Coalinga will flow to the refineries in a stream that can't be interrupted by tanker shortages or storms at sea. The important pipe line from Bakersfield and Kettleman over the Coast Range to Estero Bay will still handle heavy crudes—some 75,000 barrels a day. And the new line will handle 110,000 barrels a day.

We built an 8-inch pipe line, Bakersfield to Richmond, early in the century and used

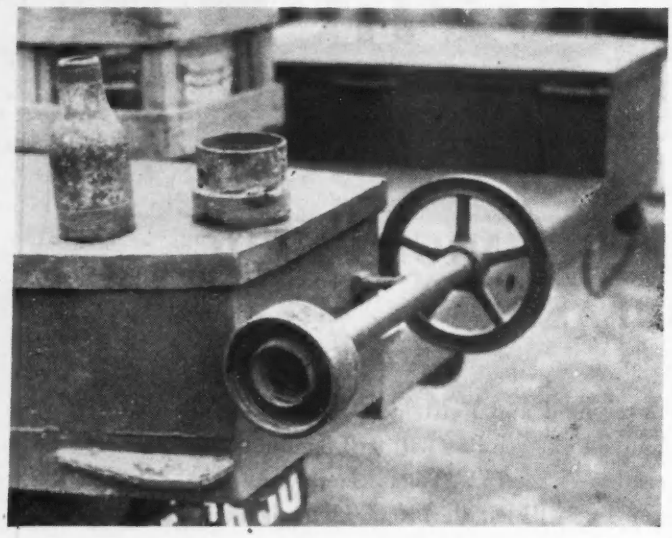


it from 1904 to 1934. With the discovery of the Kettleman field we built the pipe line, a 10-incher, that crosses the Coast Range to Estero. Sea warfare and the tanker shortage in 1942 caused the oil companies to make combined use of an existing natural gas pipe line, leasing and converting it for oil.

We decided, come peace, to build this new 18-inch line of our own. We were at it from January to July. It's a $4,000,000 project, now completed, and we're proud of it. It's the biggest oil line we've built to date on the Pacific Coast. It will help us to serve the West better than ever.

STANDARD OF CALIFORNIA

Shop Made Mandrel Facilitates Welding of Small Pipe Fittings



WELDING AIDS

A handy mandrel device mounted on the rear of the welding truck is saving considerable time and man-hours for one welding crew working on field lead lines and well connections. It consists of a horizontally mounted free-turning shaft having a wheel at one end and a special fitting attached to the other. Into the latter fitting may be screwed nearly any size pipe nipple or similar fitting up to four-inch, when such fittings are to be welded to other lengths of pipe. While the welder applies the bead, the helper stands nearby, slowly turning the handwheel, thus permitting the welder to maintain a continuous, unbroken weld for the entire circumference and resulting in a smoother, stronger weld in less time than ordinarily is required when using conventional V-blocks or rollers, the latter usually being placed on the ground or makeshift workbench. The handwheel is salvaged from a junked valve. The shaft between the wheel and screw fitting runs through a short length of 1½-inch pipe which in turn is attached at convenient working height on the side of the truck.

Referring to the photograph, the inner threaded fitting is a two-inch collar and the outer is four-inch, these fittings accommodating nipples of those sizes. For three-inch fittings, a two to three-inch swage nipple is screwed into the two-inch collar. For other sizes, such as three-inch collars and 2½-inch or three-inch upset fittings, special adapter nipples shop-made by cutting portions of the threaded ends of scrap pipe and welding to either two or four-inch nipples, provide almost any combination that might be encountered in the field. The device is easy to construct, requires no scarce or costly materials, and may be made to attach permanently or be latched temporarily to a bracket at a convenient point on either the side of the truck or on the rig itself.

$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas

PENBERTHY
"REFLEX"
WATER GAGE SET

For oil field, locomotive type and marine boilers. Water shows black — steam shows white; the water level is unmistakable. U-Bolt construction is strongest and simplest to service. Glass replaced by simply removing nuts on face of gage . . . unnecessary to work between gage and boiler. Conforms with A.S.M.E., Federal and State requirements when used for pressures specified by their respective codes.

This is one of the complete line of Penberthy gages that meet every liquid level gage requirement.

See Pages 2450 to 2455, Composite Catalog.

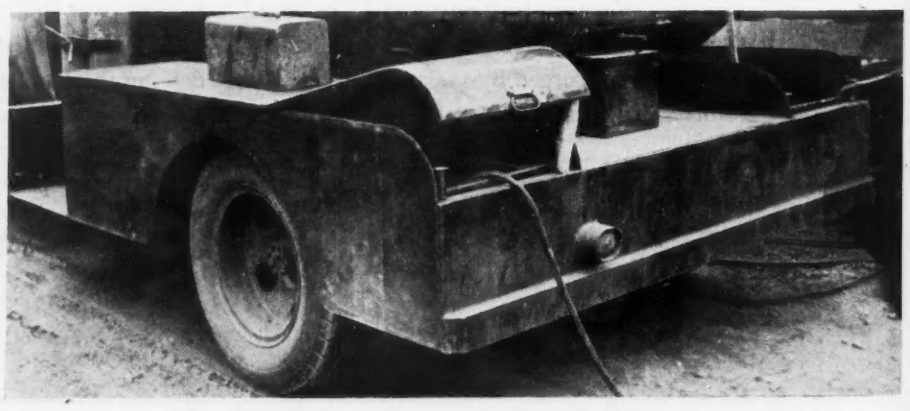
PENBERTHY INJECTOR CO.
DETROIT, MICH. Canadian Plant WINDSOR, ONTARIO

Enclosed Wells Protect Welding Cable

WELDING EQUIPMENT

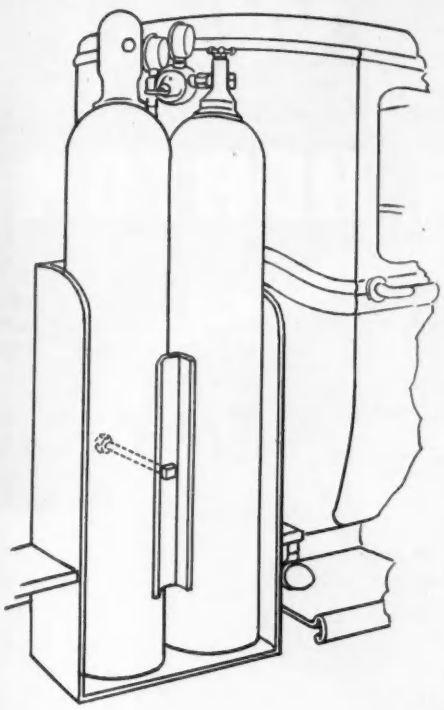
In order to provide additional room on the chassis of its field welding unit, an oil field welding company remodeled a truck body to permit addition of large bins or wells in areas to the front and rear of the rear fenders. Making use of space which formerly was not usable, the bins were built of light sheet metal and extended out to fender width, the additions being partially streamlined to round off the rear of the truck. The forward bins on either side are used for tools, fittings and other supplies, while the rear wells are designed to hold the coiled electric welding cables, ample space being required for the long cables that are needed with the welder working in more remote parts of the derrick or cellar.

Along the bottom and sides of the bin opening are welded short lengths of ¾-inch pipe, which serve as fenders in preventing chafing of the cable when withdrawn from the well. During bad weather, the partially-opened covers serve to protect the cable from needless deterioration. In addition to the storage bins provided, this modification of former body lines also leaves considerable flat workbench space on and beside the covers of the enclosure.



PRODUCTION HINTS

Angle Iron Bar Secures Oxygen Bottles To Trucks



WELDING AIDS

In designs of field welding trucks there probably are as many methods of securing oxygen and acetylene bottles as there are trucks in existence. The problem is to lock the bottles with a clamp device that will be positive, yet rapidly and easily detached. One company devised a system that excels others in simplicity of design and inexpensiveness of installation. Instead of carrying oxygen and acetylene bottles side by side in the conventional manner, the acetylene bottle is carried in a single rack on one side, while two bottles of oxygen are carried in a single wider rack on the other side of the truck. The simple oxygen bottle rack consists of a welded sheet steel enclosure, open at the front, which is designed to provide only a very small clearance between the two bottles. They are secured by laying a single length of angle iron vertically between the two bottles, as shown, and drawing it up tightly with a long bolt which has a rapid-tightening nut on the back side of the rack.

This type rack has proven very satisfactory in the rough service accorded it in oil field travelling.

Multiple Water Outlet Speeds Rigging Service Unit

COOLING SYSTEMS

In order to facilitate the rigging-up of water lines on a pulling unit each time it is set up at a well, one company utilizes a multi-outlet water line system which requires the making up of only a single small hose connection to serve the several points requiring cooling. The small water line is clamped to convenient points along the front and side of the draw works equipment, the main hose connection being placed near the rear of the truck where it is easily reached from ground level. From this point, lines branch out to the brake drums of the tubing line reel, sand reel, while another line extends over to the top of the radiator filler neck. Such an arrangement saves considerable time formerly spent in rigging up make-shift lines at each location and assures a constant supply of cooling water at the necessary points during periods when it would not be advisable to take time out to install a temporary line.

INCREASE PRODUCTION
Clean Out with a
MILLER Sand Pump

A Quarter of a Century with thousands and thousands in satisfactory use prove its World-Wide popularity.

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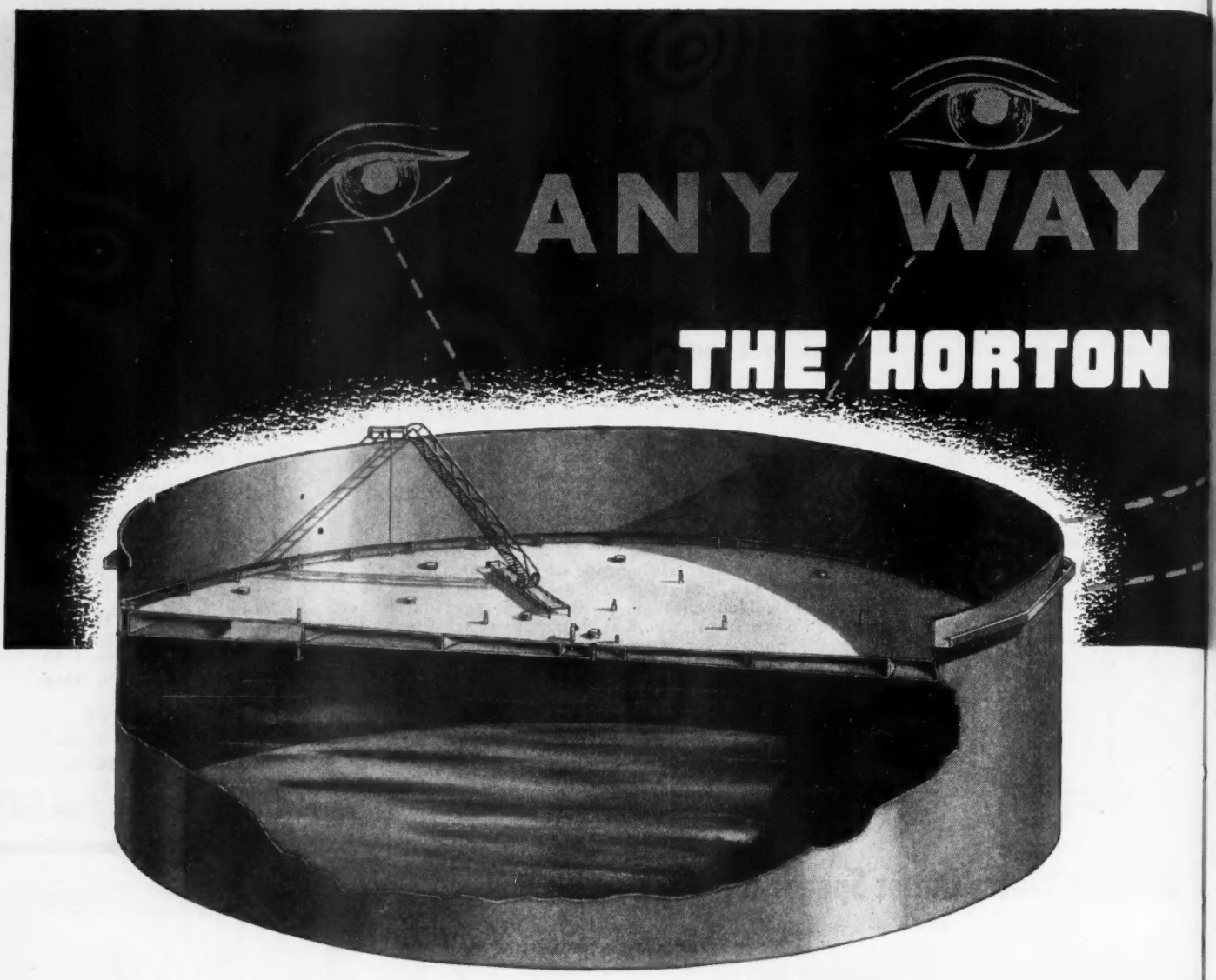
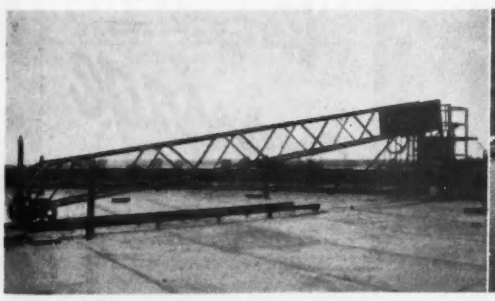
See Composite Catalog Page 1907

timely message

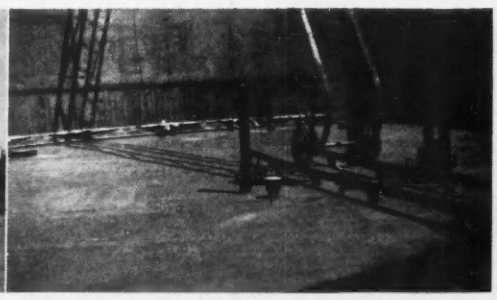
FOR OIL COMPANY AND PROCESS INDUSTRY EXECUTIVES

See Page 10



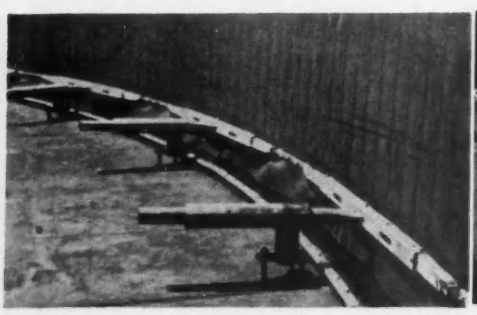


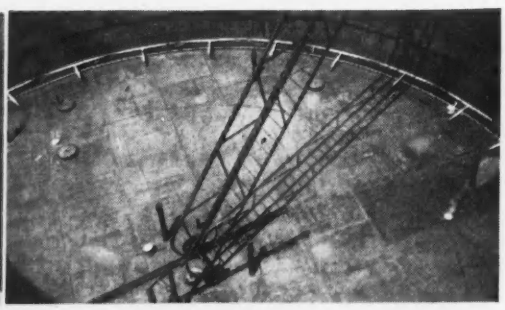
Above: View illustrating smooth, unobstructural top of a Horton Double-Deck Floating Roof on 80-ft. diam. tanks, and position of rolling ladder when tank is full.



Above: View across the top of a 60-ft. Horton Double-Deck Floating Roof with the tank empty and the roof resting on its supports.

Above: This view taken from the top of the rolling ladder shows how top deck of Horton Floating Roof slopes to center for drainage.





Extreme Left: In this view the sealing ring and hangers are in place. One edge of flexible material attached to the top of the sealing ring. The other edge is hanging loose, ready to attach to the deck.

Left: View looking down on a Horton Floating Roof resting on its supports at bottom of tank.

Refining Operations Increased; Crude Output Cut Back Moderately

Refining operations in the week ending October 5 were increased slightly over the previous week, with emphasis on gasoline output, while crude production was cut back moderately.

The week saw a slight upward swing in gasoline stocks and continued heavy additions to stocks of light and heavy fuel oils. Despite decreased distillate fuel production, stocks of this oil rose more than 2 million barrels to set a new all-time peak for the fourth consecutive week. These trends were revealed by the latest weekly report of The API.

U. S. crude production of 4,737,000 barrels daily in the week of October 5 was a reduction of 41,000 a day from the output of the previous week, but was 1,116,000 barrels or 30.8 percent over the daily average of the corresponding week of last year.

Crude runs to U. S. refinery stills amounted to 4,865,000 barrels a day during the period, an increase of 36,000 a day over the previous week, and 1,505,000 barrels or 44.8 percent over the daily runs of the comparable week a year ago.

Refinable crude stocks totaled 223,043,000 barrels on September 28, an increase of 379,000 barrels over the 222,664,000 held a week before, according to the latest report of the Bureau of Mines. These stocks exceed the 222,387,000 barrels on hand September 29, 1945, by 656,000 barrels or 3/10 of one percent.

Gasoline production, including natural blended at the refineries, amounted to 15,340,000 barrels in the week ending October 5 to show an increase of 665,000 barrels over last week's output, and 4,899,000 barrels or 46.9 percent more than that of the like week of last year. Gasoline production for the week topped demand by 85,000 barrels, bringing stocks up to 85,409,000 barrels, which is 13,508,000 barrels or 18.8 percent more than was being held one year ago.

Distillate fuel output was cut back 145,000 barrels to a total of 5,687,000 barrels for the week, which still topped production of the comparable period of last year by 2,281,000 barrels or 67 percent. Additions of 2,387,000 barrels of distillate brought stocks up to 62,214,000 barrels, a new peak. These stocks are 18,200,000 barrels or 41.4 percent higher than the 44,014,000 barrels in storage a year ago.

Residual fuel oil production for the week totaled 8,194,000 barrels, an increase of 22,000 barrels over the previous week, and 1,502,000 barrels or 22.4 percent over the like week of 1945. Stocks of this heavy burning oil increased 954,000 barrels during the week bringing the total on hand to 58,611,000 barrels, highest level for this year. This latest inventory is 11,924,000 barrels or 25.5 percent more than the 46,687,000 barrels being held October 6 of last year.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod.		Runs to Stills		Crude Stocks		Gasoline Stocks		Gasoil and Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrles	Week Ended	Barrels	Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	54,983	11-15	102,448	1-4
1942	4,337	2-7	3,961	1-3	263,208	3-28	[1]109,281	3-14	47,861	11-14	95,857	1-8
1943	4,436	11-13	4,331	12-4	245,752	5-29	94,159	3-20	47,187	11-27	72,881	1-2
1944	4,762	9-30	4,798	12-30	240,992	1-1	89,162	4-1	48,162	10-28	64,744	10-7
1945	4,944	7-21	[1]5,140	8-18	227,554	10-13	99,012	3-24	45,341	11-17	56,074	1-6
1946	[1]4,961	6-15	4,911	8-31	229,430	3-2	105,233	2-16	[1]62,214	10-5	58,611	10-5
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10-7	20,722	4-15	105,397	4-3
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10-4	28,382	4-12	90,914	7-13
1942	3,297	7-4	3,393	5-23	231,896	12-12	75,934	12-5	29,240	4-25	72,962	12-26
1943	3,821	1-9	3,579	3-18	232,191	1-9	68,182	10-16	30,732	4-3	57,596	12-25
1944	4,357	1-1	4,228	2-12	220,258	9-9	76,302	1-1	30,232	4-19	49,737	3-18
1945	3,621	10-6	3,409	10-6	[4]211,813	8-25	70,791	10-13	26,483	3-17	38,548	5-26
1946	4,403	3-9	4,498	1-12	218,193	1-5	85,324	9-28	25,131	3-9	37,289	4-6

TRENDS OF 1945 AND 1946

Trends In Week Ended	Crude Oil			Gasoline		Gasoil and Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End
1945:									
January 27	4,727	4,756	221,310	14,957	88,223	4,843	33,561	9,252	51,119
February 24	4,777	4,803	219,351	15,500	95,972	4,958	28,753	9,084	46,713
March 31	4,781	4,677	223,782	14,644	98,758	4,548	26,889	9,184	41,745
April 28	4,805	4,780	223,474	14,633	94,068	4,636	28,273	9,379	39,813
May 26	4,887	4,950	222,831	15,194	89,121	4,667	29,184	9,670	38,548
June 30	4,903	4,999	220,781	15,546	86,472	4,910	32,213	9,077	40,488
July 28	4,930	4,996	218,507	16,106	86,008	4,598	36,071	9,586	42,283
August 25	4,892	4,931	[4]211,813	15,986	84,693	4,960	39,782	9,356	46,201
September 29	4,357	3,812	222,387	11,913	79,552	3,940	43,689	7,047	46,853
October 27	4,273	4,838	224,230	15,530	74,335	5,159	43,472	8,691	45,943
November 24	4,469	4,648	219,363	15,681	83,184	4,802	45,258	8,800	47,474
December 29	4,474	4,729	218,918	14,546	95,205	5,055	36,651	8,765	42,447
1946:									
January 5	4,548	4,651	218,193	14,488	98,494	5,293	35,199	8,867	42,371
January 26	4,626	4,553	220,544	13,622	101,737	5,720	29,498	8,411	39,722
February 23	4,714	4,595	226,699	13,175	104,709	5,728	25,398	7,913	39,290
March 30	4,425	4,684	224,994	13,896	104,715	5,337	28,240	8,738	37,746
April 27	4,672	4,685	224,443	14,228	99,631	5,568	30,466	9,204	39,404
May 25	4,759	4,857	222,214	14,322	95,769	5,463	32,973	8,908	43,368
June 29	4,957	4,854	223,883	14,500	92,333	5,325	37,762	8,828	46,447
July 27	4,926	4,896	223,756	14,535	88,626	5,817	44,316	8,217	49,517
August 31	4,833	4,911	227,132	15,014	87,217	5,630	53,134	8,539	53,173
September 7	4,800	4,881	223,132	15,263	86,911	5,625	54,721	8,313	54,786
September 14	4,773	4,892	221,903	14,796	86,818	5,687	56,204	8,419	55,736
September 21	4,775	4,785	222,664	14,724	85,854	5,450	57,906	8,158	56,914
September 28	4,778	4,829	223,043	14,675	85,324	5,832	59,827	8,172	57,657
October 5, 1946	**4,737**	**4,865**	.....	**15,340**	**85,409**	**5,687**	**62,214**	**8,194**	**58,611**
October 6, 1945	3,621	3,360	222,387	10,441	71,901	3,406	44,014	6,692	46,687
Change:									
In week	−41	+36	+379	+665	+85	−145	+2,387	+22	+954
In year	+1,116	+1,505	+656	+4,899	+13,508	+2,281	+18,200	+1,502	+11,924
In year	+30.8%	+44.8%	+0.3%	+46.9%	+18.8%	+67.0%	+41.4%	+22.4%	+25.5%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922 due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, September 29, 1945.

Sample Survey of Stocks Will Be Made by Compact

Interstate Oil Compact Commission's nation-wide study to determine the actual character and availability of refinable crude oil, authorized recently by its executive committee, will be in the nature of a "sample survey" but will be sufficiently complete to give an accurate picture, officials have declared.

Last survey of petroleum stocks was made by the Bureau of Mines in 1936-37, and revealed that approximately one-third of the crude oil in storage then was in pipe line-fill and working stocks, thus not being available for immediate use.

During recent years the distribution of stocks has changed and when the Bureau of Mines was unable to make another survey because of lack of funds, the commission undertook its study.

Industry will be asked to list net refinable crude oil leases, in pipe lines, in working and storage stocks, at refineries, and in transit. Data also will be requested with reference to tank bottoms at refineries, in working tanks, storage tanks, and in pipe line station tanks.

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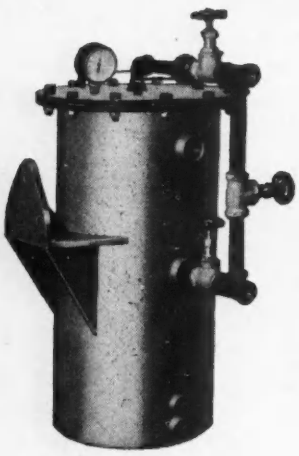

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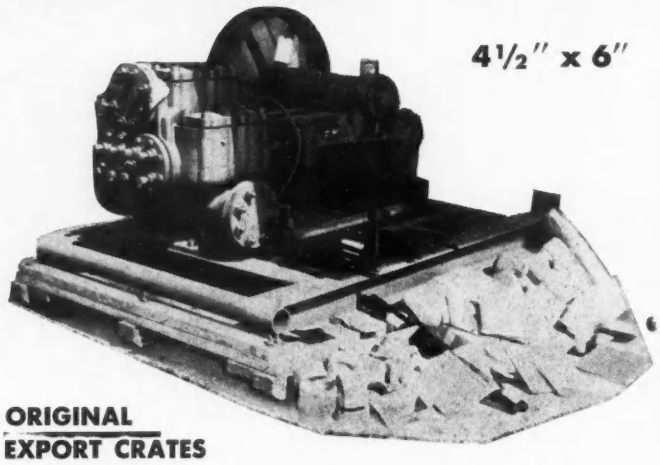

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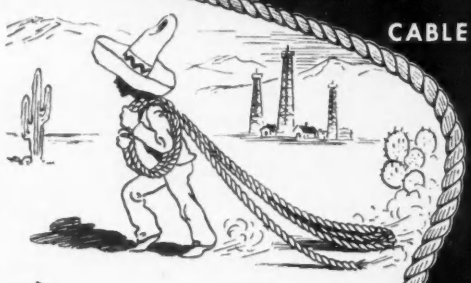

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☆ Oklahoma

Payne County Gets Oil Pool In Old Mehan Field Vicinity

New oil field apparent in Payne County; Gulf completing 2400-barrel well in Velma pool; additional oil pool looms in Cotton County; Superior of California drilling state's deepest test; Garvin County well flows 1000 barrels in 16 hours; West Moore field extended east; prospective pool opener in Seminole County gets show of oil; Okfuskee County wildcat is apparent pool opener.

Payne County: An oil field is apparently being opened by Fleet Drilling Company and C. W. Roodhouse in Ball 1-A, NE NE SW 10-18n-3e, northwest of the old Mehan field. On a 1-hour drill-stem test of the Bartlesville sand at 3927-50 feet, the well blew an estimated 250,000 cubic feet of gas a day, and recovered 225 barrels of oil in the tester. Operators are setting pipe. Location is on a farmout from Stanolind Oil & Gas Company, over a seismic structure.

Stephens County: Gulf Oil Corporation is completing a well estimated good for 2400 barrels of oil per day in the Velma pool. Doma 1, SW SW SW 11-1s-5w, registered 1412 pounds bottom hole pressure at 4850 feet, and flowing bottom hole pressure was 1104 pounds at the rate of 522 barrels of oil daily, with 174,000 cubic feet of gas based on the same rate of flow. Plug-back depth is 5180 feet.

Cotton County: Another oil pool apparently has been opened. Akin & Dimrock's Calloway 1, NE NE SW 6-5s-12w, 2 miles southwest of Randlett, drilled to 1581 feet, and found good oil stainings from 1560-71 feet. Pipe has been cemented to total depth, and testing will continue.

Caddo County: The deepest test drilling in Oklahoma is The Superior Oil of California's Weller 51-11, NW NW NE 11-8n-12w, near Fort Cobb. With total depth now below 12,730 feet, the test is heading for a record depth. A drill-stem test was taken from 9436-508 feet, which recovered 995 feet of greasy oil-cut mud. Casing was cemented at 10,240 feet. Two other deep tests, both closely-watched wildcats, are George P. Livermore, Inc.'s Giles Ranch 1, CNW NW 35-9n-5w, in Grady County, which is below 12,200 feet, and the Oklahoma Natural Gas Company et al's Oakwood Unit 1, NW NW NW 6-17n-14w, in Dewey County, now in the second Wilcox sand at approximately 12,500 feet.

Garvin County: Anderson-Prichard Oil Corporation's Caudill 1-C, NW NW SW 20-3n-2w, in the Antioch Southwest pool, tested the Bromide sand and flowed 1000 barrels of oil in a 16-hour period. It registered 700 pounds on tubing and flowed through ½-inch tubing choke. Testing continues. The company's Caudill 1-D, NE SW NW of Sect. 20, was rigging up rotary tools.

Cleveland County: The West Moore field has been extended ½-mile east by Kenwood Oil and Schermerhorn Oil's Hummel 1, SW SW SE 28-10n-3w. With total depth 8012 feet and pipe set at 7880 feet, the well flowed 260 barrels of oil a day from the Bartlesville sand zone. It is the first producer to be completed on what was formerly part of a former navy auxiliary flying field.

Seminole County: An apparent pool opener is George W. Hassell's Davis-Patterson 1, NE SE NW 29-7n-6e, old Dora area. The wildcat was drilled to the Calvin sand, 2400-17 feet, and on a drill-stem test showed some gas, with a 300-foot fillup of oil. Casing has been set at 2402 feet, and tanks are being built. Hassell has about 200 acres of leases in the section.

Okfuskee County: The Paden area may be given a new Hunton lime pool by Mid-Continent Petroleum Corporation's Baker 1, wildcat in SE NE NW 31-12n-7e. Good shows of oil and gas were logged at 4308-61 feet in the Hunton, with total depth 4361 feet. Testing continued. On a 120-minute drill-stem test at 4308-61 feet, gas came to the surface in 62 minutes, and the tester yielded 120 feet of gas-cut and oil-cut mud, as well as some free oil.

☆ Kansas

Chance Pool of Pratt County Is Extended ¾ Mile North

Chance pool of Pratt County extended north; Great Lakes Carbon attempts to extend Sun City pool west; Cities Service starts wildcat in Edwards County; Rooks County wildcat abandoned.

Pratt County: The new Chance pool, opened by Bridgeport Oil Company, has been extended ¾ mile north by the company's Jo 1, SW SW SW 35-26s-13w. At 4443 feet in the Arbuckle lime, topped at 4433 feet, the well pumped 22 barrels of oil in 32 hours, following acid treatment. Operators plugged back to 4389 feet, and perforated pipe at 4380-86 feet, opposite the Simpson sand, and acidized with 1000 gallons. In a 12-hour pump test the Jo produced 33 barrels of oil an hour.

Barbara County: The Great Lakes Carbon Company is attempting to extend the Sun City pool ½ mile west at

Wells Completed in United States in Week Ended October 12, 1946

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second or third issue of each month. More detailed data on wildcats published in third or fourth issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative This Year	Cumulative Last Year
Alabama	....	....	....	....	....	....	....	....	....	....	....	1	13	28
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Arkansas	1	....	....	....	1	....	1	....	....	1	2	3	143	149
California	28	1	....	1	30	1	....	....	5	5	36	30	1,434	1,708
Colorado	3	....	....	....	3	....	....	....	....	....	3	5	119	33
Florida	....	....	....	....	....	....	....	....	1	1	1	1	21	11
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	2	6
Illinois	22	....	....	13	35	3	....	....	12	12	50	85	1,698	1,495
Indiana	7	1	....	2	10	....	....	....	....	....	10	13	373	267
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Kansas	23	8	....	3	34	....	1	....	1	2	36	40	1,594	1,324
Kentucky	6	....	....	3	9	....	1	....	2	3	12	9	494	486
Louisiana	17	1	....	8	26	....	2	....	3	5	31	33	1,026	817
North Louisiana	8	1	....	6	15	....	....	....	2	2	17	21	581	319
South Louisiana	9	....	....	2	11	....	2	....	1	3	14	12	445	498
Michigan	3	5	....	3	11	....	....	....	2	2	13	16	610	603
Mississippi	....	....	....	1	1	....	....	....	2	2	3	7	175	300
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	22	42
Montana	3	....	....	1	4	....	....	....	1	1	5	8	205	180
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	3	3
New Mexico	18	3	....	....	21	1	....	....	1	1	23	6	348	337
New York	15	....	10	....	25	....	....	....	....	....	25	26	937	892
North Carolina	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Ohio	9	8	....	7	24	....	....	....	3	3	27	29	960	770
Oklahoma	38	3	....	13	54	1	....	....	9	9	64	96	2,253	1,840
Oregon	....	....	....	....	....	....	....	....	....	....	....	....	2	....
Pennsylvania	27	5	15	1	48	3	....	....	....	....	51	49	2,459	2,325
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Texas	93	6	1	20	120	5	4	3	24	31	156	138	6,311	5,734
E. Tex. Bor. Co.'s	1	1	....	....	2	....	....	....	....	....	2	2	131	84
Rest of E. Texas	3	....	....	....	3	....	....	....	2	2	5	7	416	181
North Texas	19	....	1	11	31	3	1	....	7	8	42	28	1,779	1,382
W. Central Tex.	8	....	....	4	12	1	....	....	3	3	16	16	508	376
West Texas	26	....	....	....	26	1	2	....	6	8	35	39	1,359	1,385
Tex. Panhandle	7	3	....	....	10	....	....	....	....	....	10	6	291	485
G. Coast, Upper	6	....	....	2	8	....	1	1	3	5	13	16	516	554
G. Coast, Lower	19	1	....	1	21	....	....	2	2	4	25	15	860	821
Southwest Texas	3	1	....	....	4	....	....	....	....	....	4	6	321	391
S. Central Texas	1	....	....	2	3	....	....	....	1	1	4	3	130	75
Utah	....	....	....	....	....	....	....	....	....	....	....	....	3	....
Virginia	....	....	....	....	....	....	....	....	....	....	....	....	2	....
Washington	....	....	....	....	....	....	....	....	....	....	....	....	1	1
West Virginia	2	18	....	2	22	....	....	....	....	....	22	16	585	632
Wyoming	1	....	....	1	2	....	....	....	....	....	2	2	122	131
Total U.S.	316	59	26	79	480	14	9	3	66	78	572	613	21,920	20,119

* Includes distillate wells. † Includes salt water disposal wells.

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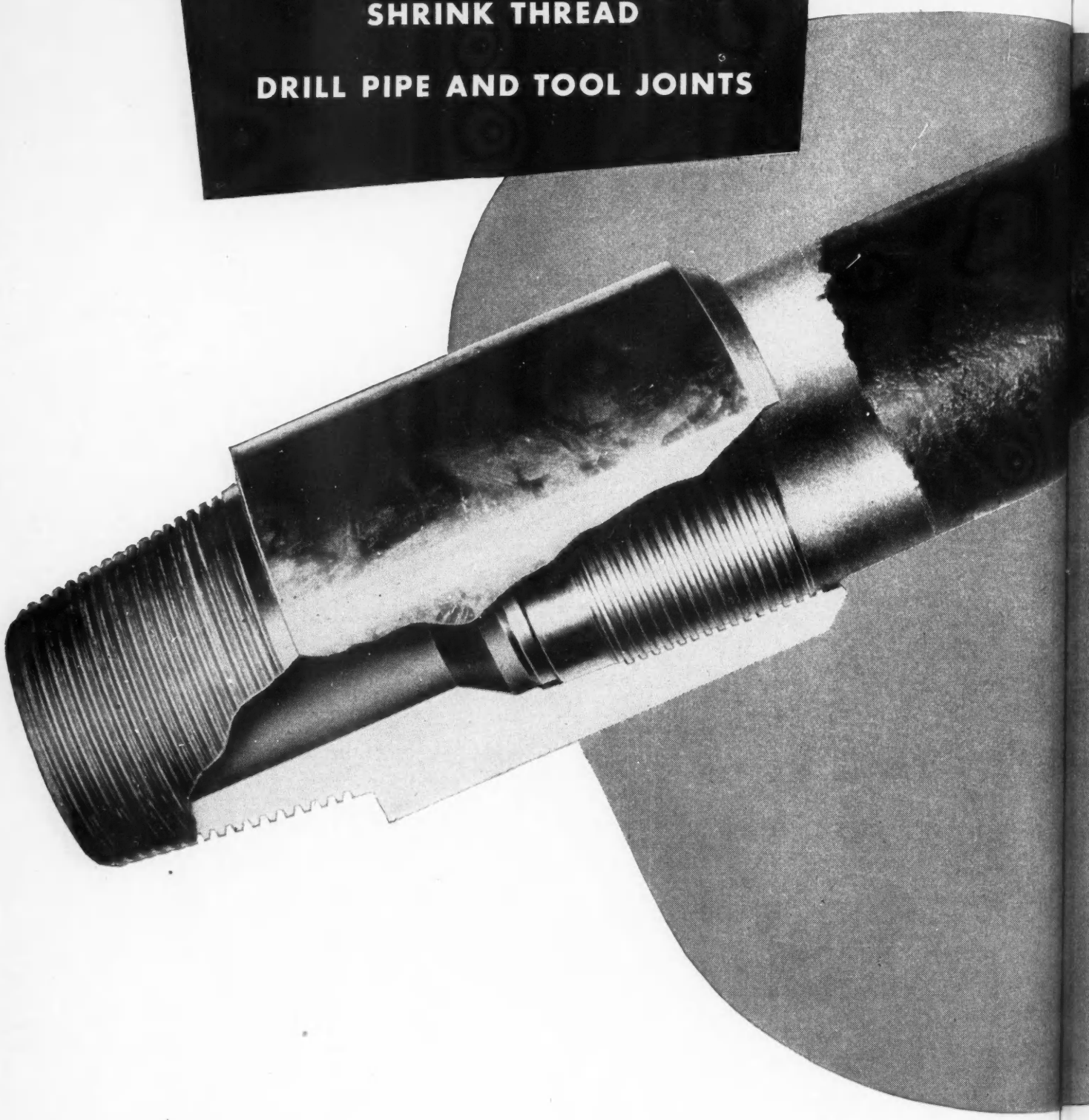

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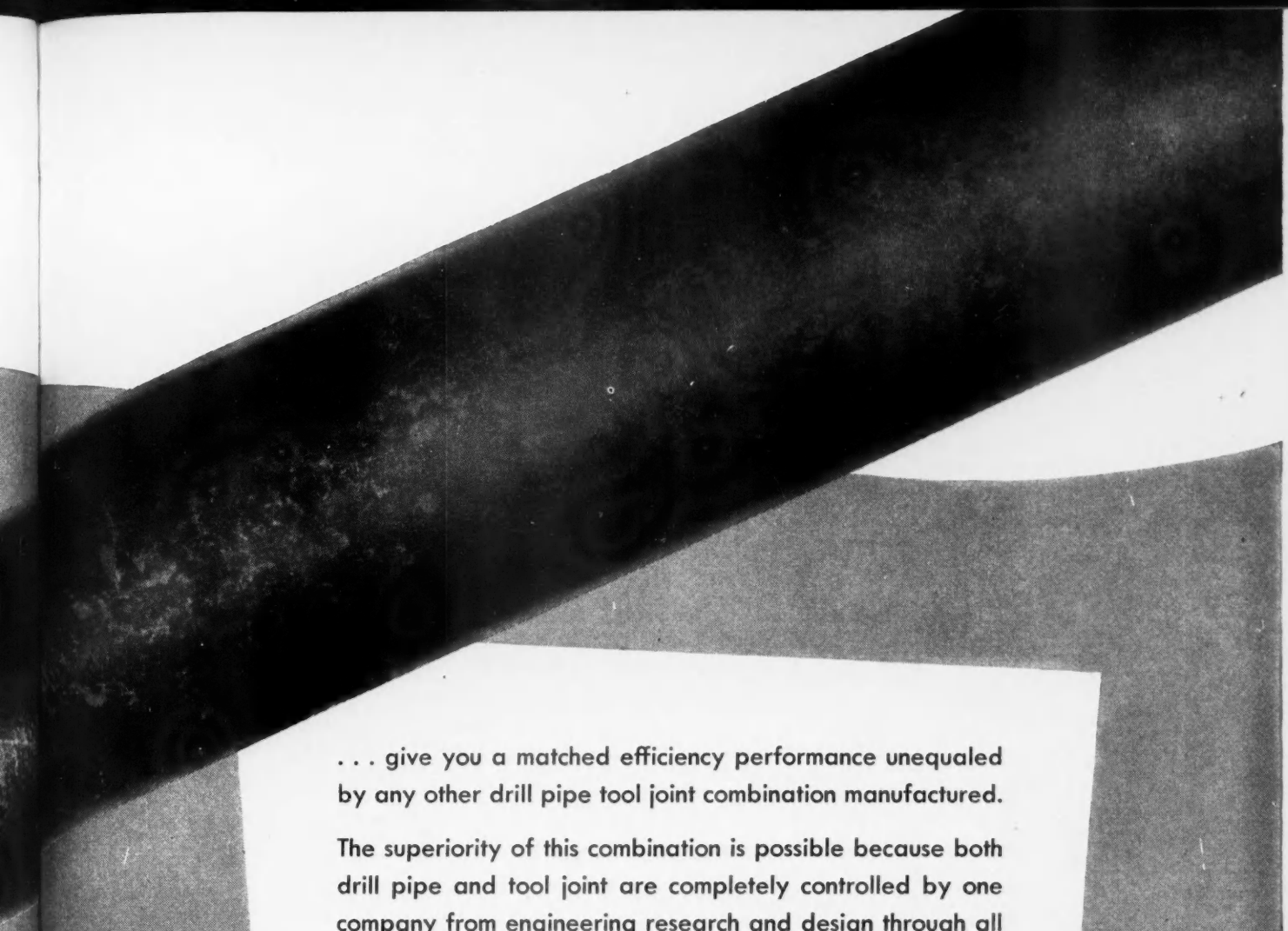

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the Massey 3 "B," SE NE SE 27-30s-15w. The well is now drilling below 2750 feet.

Edwards County: Cities Service Oil Company has spudded Blatter 1, SW SW SW 13-25s-16w, wildcat a mile west of the Stafford County line. Tools are below 2000 feet. The test is on a block of 3200 acres leased by the company and about 5 miles from the Belpre gas pool.

Rooks County: C. E. Ash's Krueger 1, SW NW SW 28-10s-16w, southeastern part of the county has been abandoned as dry. The test was drilled to 3711 feet, with the Kansas City lime marked at 3193 feet, conglomerate at 3494 feet, Simpson sand at 3625 feet, and Arbuckle lime at 3659 feet. No commercial shows of oil were reported. The test was on a 2000-acre block extending into Ellis County. Ash has announced plans for a second test for the block, however, at Craig 1, SE SE NE 4-11s-16w, in Ellis County, 2 miles south of the Krueger. This test is approximately 3 miles northeast of Bemis-Shutts pool production.

☆ New Mexico

Eunice Townsite and Brunson Area United in Yeso Horizon

Yeso production in Eunice Townsite area to overlap into Brunson field; Clear Fork production indicated at Hobbs; Pennsylvanian oil show in Chaves County wildcat proves negative on drill-stem test.

Lea County: Amerada Petroleum Corporation's Corrigan 1, C SW NE 4-22s-37e, ¼ mile north of Ellenburger production in the Brunson area and ⅝ mile southwest of Yeso production in the Eunice Townsite field, flowed 11 barrels of oil per hour when tester was used at 6514-6622 feet. It will continue to the Ellenburger. The company's Hare 1-A, east offset to the most southwesterly Yeso producer in the Eunice Townsite area, flowed 19 barrels per hour through tester at 6495-6518 feet. Five-inch pipe was cemented at 6605 feet, and will be perforated at 6505-08 feet to use plastics on upper gas zone. These 2 Yeso flowing wells unite the townsite and Brunson fields on this horizon.

Hobbs Field: Sun Oil Company's McKinley 1-B, SW SW NE 20-18s-38e, northeast edge of San Andres production, boosted the outlook for deeper production when a drill-stem test in Clear Fork at 6096-6166 feet yielded 60 feet of 38-gravity oil and 440 feet of oil-cut mud. This zone was followed by dry lime in drilling to 6205 feet. The Glorietta was entered at 5580 feet, with elevation 3657 feet, and tested water. The Hobbs structure is rated the outstanding deep prospect for the state.

Curry County: Humble Oil & Refining Company's Northcutt 1, C SE SW 32-8n-37e, 1½ miles northwest of a 7805-foot granite failure in Texas, recovered granite-wash in core at 6670 feet. It is due to deepen about 100 feet and abandon, being 140 feet low.

Chaves County: Magnolia Petroleum Company's Black Hill Unit 1, C NW NE 31-17s-20e, tested dry at 4431-61 feet in Pennsylvania, topped at 4380 feet with elevation of 4902 feet, and was drilling lime and chert at 4720 feet.

☆ West Texas

Ward Ordovician Prospect Has Flow of Oil from Wolfcamp

Ward County Ordovician prospect registers oil flow from Wolfcamp; cluster of 5 wildcats being started in Andrews County to forestall lease expirations; three tests abandoned near Block 12 field due to low structural position.

Ward County: Phillips Petroleum Company's University 1-B, C NW NW Sect. 28, Block 16, 1½ miles southeast of Pyote, improved its outlook for making a discovery, and was drilling lime at 9660 feet to explore the Ellenburger. A drill-stem test in Wolfcamp at 9325-9436 feet tested gas at a rate of 300,000 cubic feet daily, and the well headed oil while removing drill pipe. Recovery consisted of 800 feet of oil and gas-cut mud. The company paid $54,000 cash and agreed to drill a 5000-foot test for its supporting block of 4312 acres of University leases.

Andrews County: M. H. (Pat) Marr and Grady H. Vaugh are starting 5 projected 9000-foot Devonian tests on Lotus Oil Company et al fee, centering about 3 miles southwest of the South Fullerton-Devonian field. The tests are on 80-acre leases that require immediate drilling to forestall expiration. This proposed development is north of Mid-Continent Petroleum Corporation's Culberson 1, scheduled 9350-foot test, drilling lime at 5220 feet.

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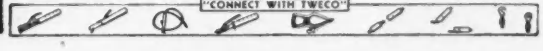

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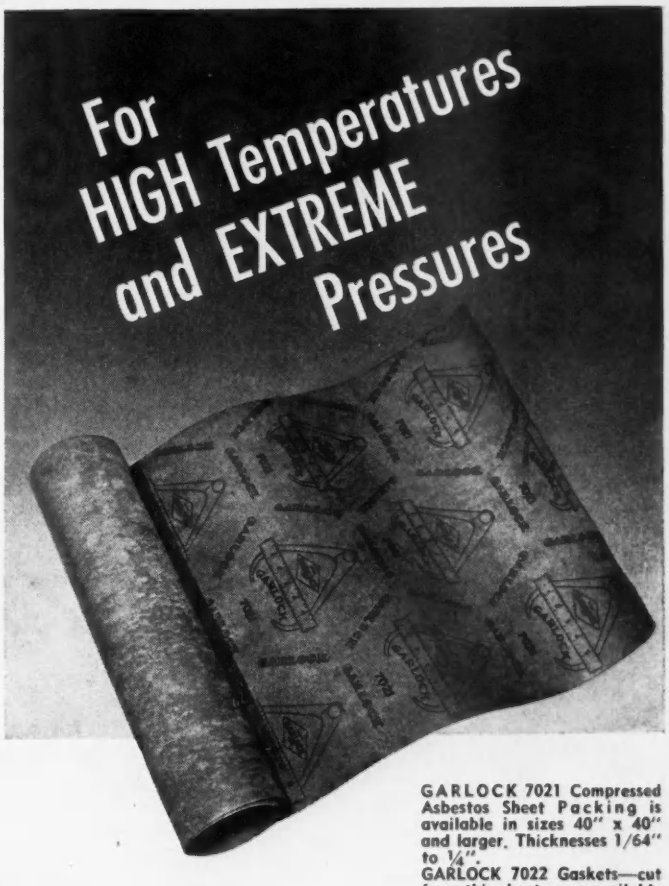

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Los Angeles, California

ing Company's University 1-O and University 1-P and Seaboard Oil Company's University 1-A, all northwest outposts for the Block 12 area, was due to their relatively low structural position. Atlantic's University 1-E and Phillips Petroleum Company's University 1-O missed the Clear Fork pay, but are deepening to Devonian. The area has 4 producers; 2 wells in process of completion, and 21 additional active tests. No new drilling will be undertaken to perpetuate leases due to expire November 14.

Ector County: Phillips Petroleum Company et al's Millard Unit 1, southwest outpost for the Murchison area, entered the Devonian at 8643 feet, or 165 feet low, and recovered 370 feet of oil-cut mud and 640 feet of salt water when tester was used at 8670 feet. This showing eliminated the Devonian as a source of production, but the test is being deepened. However, 2 zones in the Clear Fork, topped at 5410 feet, or 2 feet low to the discovery, showed possible production.

Phillips' TXL 1-J, C SE SE T&P 9, a mile east outpost for the TXL field and east of a steep fault that defines the field, was idle for orders after testing dry at 11,150-218 feet in granite wash, topped at 11,160 feet. This outpost logged 740 feet of Ellenburger, topped at 10,420 feet, or 830 feet low.

Shell Oil Company's Thomas 3, C NE NE T&P Ry. 28, northwest offset to the 10,800-foot Ellenburger producer on the east side of the TXL field fault, was flowing 190 barrels of 35-gravity oil with some water daily through 20/64-inch choke after acidizing Clear Fork at 5748 feet, having plugged back from dry Ellenburger at 11,051 feet. It is 2 miles north by west of nearest Clear Fork producer.

Kent County: Humble Oil & Refining Company's Elkins 1, ¾ mile northeast of its Polar pool discovery at 7775-7810 feet, entered the Ellenburger at 7787 feet, or 20 feet low, and was awaiting a new drill-stem test at 7860 feet. A drill-stem test at 7810 feet yielded only 15 feet of oil and gas-cut mud, while a second test at 7826 feet showed 80 feet of slightly oil and gas-cut mud. Outlying failures have been drilled to the west and northwest.

Crockett County: Stanolind Oil & Gas Company's University 1-GG, prospective Ellenburger discovery and 18 miles southeast of the Barnhart field, was cleaning out after a 140-quart nitro shot at 8336-72 feet, having plugged back from water at 8384 feet. This well showed a small volume of oil after acidizing the section. Pipe was cemented at 8298 feet, excluding prolific flow of gas and distillate in the upper Ellenburger, topped at 7975 feet. Stanolind is rigging up for a test ½ mile north, while Shell is starting a test 1½ miles southwest. The area involves a large geophysical high.

Winkler County: Stanolind and Westbrook-Thompson Holding Corporation's Hendrick 35-A, Hendrick field, was perforating higher after swabbing salt water that could not be lowered below the 3000-foot level from perforations and open hole at 13,760-815 feet. The water tested 180,000 parts per million chloride. The Ellenburger was entered at 13,385 feet, and most promising pay was logged at 13,668-13,738 feet.

Midland County: Humble's Turner 1, 2 miles south of its Midland field Pennsylvania discovery at 10,370-10,390 feet, entered the Strawn at 10,306 feet, correlating about flat with the producer, and cemented 7-inch casing on bottom at 10,316 feet. The discovery showed considerable gas in the top of this section, but completed in lower zone.

Wheeler Field: Phillips' TXL 1-G, ½ mile east outpost and the highest of 20 Devonian and Ellenburger producers, flowed 616 barrels of 44.7-gravity oil, with gas-oil ratio 1220/1, on 8-hour completion gauge through ½-inch choke from perforations at 10,575-600 feet in Ellenburger, topped at 10,430 feet. It is a dual completion, having tested 945 barrels of 46.4-gravity oil, with gas-oil ratio 2929/1 initial through ½-inch choke from Devonian perforations at 8460-8520 feet. The upper section of the Devonian, topped at 8220 feet, tested an unusually large flow of gas and distillate. Samedan Oil Corporation's TXL-Texaco 1, ½ mile east of this producer, correlates equally high on the upper markers, and was drilling at 7010 feet.

Texaco Service Awards

The Texas Company's annual service award dinner for employes in the Houston area will be held October 30 under the auspices of the Texaco Old-Timers Club of Houston. Gold watches will be awarded to 28 employes for 30 years service and emblems will be given to 47 other employes for 25 years of service.

Similar dinners will be held at nine other places in Texas during October and November to honor more than 1500 employes and former employes of The Texas Company with 25 years or more of service.

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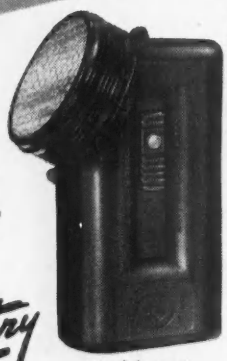

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☆Central West Texas

Two Jones County Oil Strikes In Process of Completion

Jones County has 2 oil strikes in process of completion; new pay given Reddin field; Fisher County new lime area to be explored for Ellenburger production.

Jones County: Delta Oil Company's Grove 1, northeast corner of Lot 1, J. W. McKissick Survey and 1⅓ miles south of the Hawthorne pool, opened a new pool in flowing oil by heads prior to cementing pipe on top of Gunsight at 2670 feet. Production is from lime at 2680-82 feet. Owner has a block of 2000 acres in the area.

R. H. Roark-L. F. Hooker et al's Hodges 1-A, Bell Survey 6 and 1¼ miles southeast of production, was pumping 10 barrels oil hourly on preliminary test after using acid at 1940-44 feet. This wildcat is 1¾ miles southwest of a recent discovery by Harry W. Elliott et al.

Geochemical Surveys Inc.'s Cranston 1, T&P Ry. 11, Block 17, pumped 73 barrels of oil and a little water on 23-hour test after acidizing at 2712-17 feet. This discovery is 3 miles northwest of Wimberly.

Fisher County: Skelly Oil Company's Huddleston 3-A, east offset to its prolific Palo Pinto lime discovery for the Eskota area, entered the Palo Pinto reef at 4447 feet, or 169 feet low, but flowed oil when tester was used at 4453-75 feet. A second test at 4477-91 feet yielded oil and water. It will be deepened to the Ellenburger before setting pipe for completion.

Taylor County: West Central Drilling Company's Buster Horton 5, Lot 1, D. B. Corley Survey, is showing for the first producer from the Dothan in the Reddin pool, having indicated a commercial pumper from this zone at 1810-30 feet and will be dually completed from Flippen open hole at 2177-85 feet. The company's Bell 6 is also to be dually completed from these zones.

Paul Steed et al's Norwood 1, wildcat, was abandoned in Adams Branch reef lime at 4160 feet.

Erath County: McCarthy Oil and Gas Corporation's Hedrick 1 situated on a 16,000-acre lease, was drilling Hickory sand at 6730 feet. This wildcat logged Ellenburger from 4628-6446 feet, with a promising show of oil and gas reported at 4909-23 feet.

Bureau Report Reflects Upward Production Trend

Domestic crude production moved upward in June to an average of 4,896,000 barrels daily, an increase of 111,000 barrels over May and topping wartime June, 1945, by 42,000 barrels, the Bureau of Mines has reported. The outstanding changes were increases of 108,000 barrels daily in Texas and 4000 barrels in Colorado, and a decline of 6000 barrels in Illinois.

Demand for domestic crude was close on the heels of output, averaging 4,860,000 barrels daily, an increase of 63,000 barrels over May. The addition of 36,000 barrels daily to stocks brought total crude inventories, domestic and foreign, to 228,061,000 barrels on June 30, compared with 226,505,000 barrels May 31.

Oil-well completions were up 94 over May and 46 over June, 1945, to 1396, but while the 3870 drilling rigs active at the close of the month were 308 over May they were 379 fewer than a year ago.

Runs to Stills

The Bureau reported that crude runs to stills averaged 4,836,000 barrels daily in June, a gain of 42,00 barrels over May, and refined stocks increased 7 million barrels during the month to a total of 224,551,000 barrels. Total demand for motor fuel amounted to 66,100,000 barrels against 69,800,000 barrels in May, but stocks of finished gasoline were reduced 2,100,000 barrels while those of fuels increase, residual fuel oil by 2,600,000 barrels, distillate fuel oil by 4,900,000 barrels and kerosine by 1,600,000 barrels. The yield of gasoline from crude rose from 38.8 percent in May to 39.1 percent in June.

New supply in June included 146,890,000 barrels of domestic crude against 148,334,000 barrels in May, 9,351,000 barrels of natural gasoline against 9,379,000 barrels and 150,000 barrels of benzol, unchanged, a total production of 156,391,000 against 157,863,000 barrels. Imports of 6,880,000 barrels of crude against 7,508,000 and 4,238,000 barrels of refined products against 4,667,000 brought the total new supply to 167,509,000 against 170,038,000 barrels.

Total demand was 158,570,000 against 165,599,000 barrels the preceding month, and included exports of 3,323,000 crude against 3,614,000 barrels and 11,110,000 refined products against 10,312,000 barrels, and domestic demand for 63,221,000 motor fuel against 66,774,000 barrels; 5,185,000 kerosine against 6,338,000 barrels; 14,850,000 distillate fuel oil against 18,297,000 barrels; 39,283,000 residual fuel oil against 39,346,000 barrels; 2,715,000 lubricating oil against 2,866,000 barrels; 149,000 wax against 197,000 barrels; 577,000 coke against 752,000 barrels; 4,543,000 asphalt against 3,499,000 barrels; 636,000 road oil against 397,000 barrels; 7,570,000 still gas against 7,553,000 barrels; 3,546,000 miscellaneous against 3,579,000 barrels, and 1,862,000 losses against 2,075,000 barrels.

New Montana and Wyoming Charts Issued by USGS

Possibilities for new discoveries of oil and gas in the Devonian rocks of central Montana and beneath the Tertiary formation in the northeastern part of the Wind River Basin in Wyoming

See Page 10

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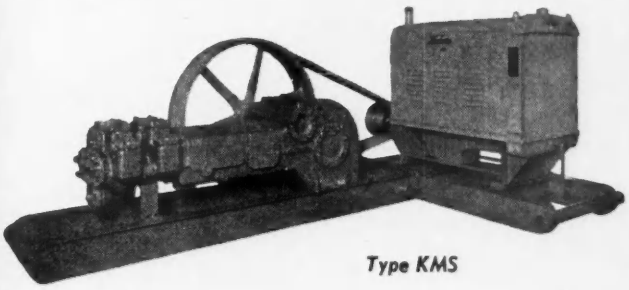

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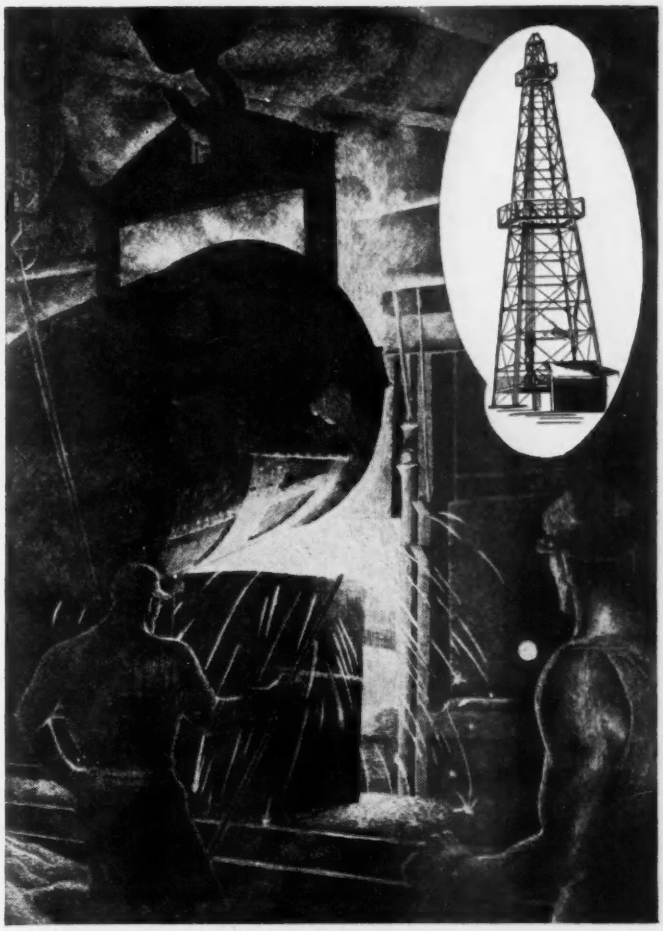

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are indicated in new charts of those areas just published by the U. S. Geological Survey.

In Preliminary Chart 25 of the Oil and Gas Investigations series, the survey shows porous and permeable beds present in the dolomite member of the Jefferson formation in the Big Snowy Mountains of Montana.

Results of the Wind River Survey are published in Preliminary Chart 22, which indicates there may be fault traps or closed folds in rocks that lie beneath the cover of Tertiary rocks south of the Big Horn Mountains.

The Montana chart at 35 cents and the Wyoming chart at 40 cents are available from Washington, Casper, Wyo., Denver or Tulsa. Copies of the Montana chart also can be had in Billings.

Cost Accountants to Hear Oil Industry Speakers

The program committee of the Tulsa Chapter of the National Association of Cost Accountants announced its program for the 1946-47 fiscal year, at which speakers connected with the oil industry, as well as educators and bankers, will participate. The first program for the year was held in September with Prof. Paul J. Graver, University of Tulsa, speaking on "Recent Trends in Cost Accounting."

The program for the year follows:

October 16, Prof. B. F. Harrison of Oklahoma A. & M. College, speaking on "Educational Trends in Cost Accounting"; November 20, Falkner C. Broach, vice president, National Bank of Tulsa, speaking on "Some Consequences of Our War-Time Finance"; December 18, Dr. R. P. Marple, National Association of Cost Accountants, "Research—The Key to Improved Cost Accounting"; January 22, 1947, Arthur L. Cotham, Oklahoma Tax Commission, "Comparisons Between Oklahoma and Federal Income Tax Laws."

February 19, R. E. Thompson, vice president, First National Bank & Trust Company, "Business and Propaganda"; March 19 Charles E. Votrain, vice president of the Bareco Oil Company, "Pension Plans"; April 16, Oakah L. Jones, Oklahoma Natural Gas Company and National President of the National Office Managers Association, "The Office Manager Looks at the Office"; and May 21, Roy W. Olson, Liberty Glass Company, E. P. Priebe, Skelly Oil Company, and Robert H. Kerr, Barrow, Wade, Guthrie & Company, in charge of "Past Presidents' Night."

Technical discussion leaders will include Claude Williford; Joseph B. Galbraith, Stanolind Oil & Gas Company; Edward D. Loughney, Gulf Oil Corporation; Joe V. Bowman, Engineering Laboratories, Inc.; Herschel S. Medlin, Moorlane Company; Charles Edward Sims, Peters Petroleum Corporation; Clovis Schlegel, Parker Drilling Company, and Mack Porter, Southwestern Power Administration.

API District Production Meetings Are Scheduled

Dates and chairmen for 1947 spring meetings of three district organizations of the Division of Production of the American Petroleum Institute have been announced as follows:

Eastern District, William Penn Hotel, Pittsburgh, Pa., April 16, 17, and 18, R. L. Anderson, Columbian Carbon Company, Charleston, W. Va., chairman.

Mid-Continent District, Herring Hotel, Amarillo, Texas, May 22 and 23, H. S. Kelly, Phillips Petroleum Company, Bartlesville, Okla., chairman.

Pacific Coast District, Biltmore Hotel, Los Angeles, May 15 and 16, M. W. Morris, Standard Oil Company of California, Los Angeles, chairman.

Other district meeting dates and places will be announced later.

Atlantic Buys Tankers

The Atlantic Refining Company has purchased two large, high-speed tankers, from the Maritime Commission for $4 million.

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☆ North Texas

Haskell County Wildcat Has Choice of Three Oil Zones

Haskell County wildcat has choice of 3 promising oil zones; nitro shot due for Clay County deep prospect; northeastern Young County receiving substantial development.

Haskell County: Thomas D. Humphrey's Chapman 1, NEc Block 60, H. Tidwell Survey and 3 miles northeast of the Lawson field, was running pipe to test 3 prospective oil-producing zones after drilling to 5470 feet, or about 100 feet in the Mississippian. This wildcat, which is supported by a block of 15,000 acres, logged effective oil saturation in the 2500-foot Canyon, and in the K-M-A lime at 4060-4100 feet, while the electrical formation survey indicated 34 feet of oil sand in the Strawn, topped at 4260 feet.

Clay County: Jack Grace et al's Bryant Edwards 1-B, S. C. Beldon Survey, A-12, 2⅓ miles northwest of the Hapgood pool, was awaiting nitro shot after testing dry in broken oil sand at 5467-5505 feet. This wildcat showed promise of making a producer when drill-stem test was made of the zone, but failed to yield oil or gas after drilling plugs from casing at 5462 feet.

Young County: Homer W. Snowden Oil & Gas Company has become the most active operator in the district in developing its large block of leases acquired from Kerlyn Oil Company and Phillips Petroleum Company in the Cope, Garvey and nearby pools. The firm has 13 active tests; 3 wells in process of completion, and 14 locations.

Jack County: Charles Grace et al's Sheppard 1, southwest corner of Sect. 56, Block 2, Henderson CSL Survey, and 1⅛ miles east by south of the Risch field, was making production test of conglomerate oil pay at 4390-4402 feet, with hole bottomed at 4620 feet. Pipe was cemented at 4330 feet.

☆ East Texas

Rodessa Production Test Made By Hawkins Field Prospect

Deep prospect on northeast flank of Hawkins field making production test of Rodessa; wildcats in south end of Woodbine belt are disappointing; second deep test at Coke checking low.

Wood County: Humble Oil & Refining Company's McKnight 1,W. R. James Survey and northeast edge of the Hawkins field, was plugged back from sandy-shale at 9143 feet to 8970 feet to run a drill-stem test. It will test nominal porosity and saturation in the Rodessa that was revealed by electrical formation survey and sidewall cores.

Houston County: John Ivy and W. T. Moran's Murray 3, John Durst Survey, projected 10,000-foot Edwards lime test, was coring shale at 7870 feet with the Woodbine due near this level. The sub-Clarksville sand was entered at 7792 feet, with elevation of 188 feet, correlating 126 feet high to be partnership's first Woodbine test on their large lease.

Leon County: J. B. Daniel Oil Company's Cox 1, John Scritchfield Survey and 1½ miles west by south of a small Woodbine pumper awaiting completion,

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had failed to log sand beds in coring the Woodbine section to 7205 feet. United North & South Development Company's Oden 1, W. Martin Survey 7 and 2 miles south of Flynn, entered Gober chalk at 5946 feet, and was drilling at 5980 feet.

Carter-Graff Oil Company's Hammett 2, Henry Smith Survey, extended oil production in the Navarro Crossing field into Leon County with a flow of 119 barrels of oil on 18-hour test through small choke from Woodbine open hole at 5811-13 feet. This extension is 1900 feet south of the firm's gasser on the 650-acre lease.

Coke Field: Amerada Petroleum Corporation et al's Coke Unit 2, 2200 feet northwest of the field's prolific gas-distillate discovery in the Young at 8080-8130 feet, was making a drill-stem test at 8208 feet. No pay was indicated in drilling the Young to this level, but this may be attributed to a fault logged at 8125 feet.

Smith County: Humble Oil & Refining Company's Moseley 1, northwest offset to the Mount Sylvan field discovery, flowed 111 barrels of 34-gravity oil, gas-oil ratio 150/1, from Paluxy perforations at 7360-70 feet. Working pressure on tubing and casing was 95 pounds and 125 pounds, respectively. Humble has scheduled 5 additional tests in the area, which have been held back on development due to failures east and southeast of the discovery.

Wildcat Failures: Humble's Guaranty Bank 1, Titus County, was abandoned in Paluxy water zone at 5391 feet. In Houston County, Magnolia Petroleum Company's Southern Pine Lumber Company 1-A, Leonard Williams Survey, tested water in Woodbine, topped at 5961 feet, and was abandoned at 7407 feet in Edwards lime. Buda was topped at 6488 feet.

Ohio Posts Price Hike

The Ohio Oil Company increased the posted price of Dry Creek, Carbon County, Montana, crude from $1.37 per barrel to $1.60 per barrel.

☆ Southwest Texas

Duval County Peters Field North Outpost Makes Oiler

Peters field north outpost completed as oiler; Labbe field area wildcat abandoned; new pay sand discovered at South Rincon; deep oil producer for Charco Redondo field completed.

Duval County: Humble Oil & Refining Company's Dallas Joint Stock Land Bank 1-F, outpost north of production in Peters field, has been completed for a potential of 18.31 barrels of 22.3-gravity oil daily. Flow was through ¼-inch choke and tubing pressure was 100 pounds and shutin pressure 390 pounds. Production is from perforations at 2092-98 feet with total depth 2429 feet and 5½-inch casing set on bottom. Several drill-stem tests were made in the hole prior to completion.

J. W. Gorman et al's Florence Lowe 2, wildcat about 1½ miles east-northeast of Labbe field, has been abandoned. A drill-stem test at 2441-45 feet recovered 1900 feet of salt water 20 percent being oil. These perforations were squeezed and casing reperforated at the same level and tested salt water and oil again. The hole was then abandoned. Total depth is 2705 feet and 5½-inch casing was set to 2480 feet.

Starr County: W. H. Holland's M. M. Garcia 1, 2200 feet north-northeast of the discovery well at South Rincon, has been completed as a gas well in a new pay zone for the field. Casing was perforated at 2925-37 feet and flowed gas with no gauge taken through ¼-inch choke. Shutin pressure was 1150 pounds and tubing pressure 75 pounds. Total depth is 3930 feet with 5½-inch casing set to 3030 feet. This well missed the 3400-foot discovery pay sand, being shaled out.

Zapata County: F. P. Schwab et al's Anastacio Garcia 1-A has discovered deep oil production in the Charco Redondo field. The well has been completed on the pump and gauged on potential 60.5 barrels of 26.7-gravity oil daily with gas-oil ratio 200/1. Production is from open hole at 1691-98 feet, total depth. The well is 1200 feet southeast of the Garcia 2 well. The first producer in the deep zone was R. T. Wilson's Garcia 2, a gas well completed in 1944.

☆ South Central Texas

Atascosa County Dobrowelski Wildcat Prospect Abandoned

Dobrowelski prospect wildcat abandoned; drilling resumed in D'Hanis area wildcat; small producer completed at Minerva-Rockdale; Crystal City wildcat below 3702 feet.

Atascosa County: Humble Oil & Re-

YOUR ANSWER TO MATERIAL SHORTAGES

See Page 10

fining Company's Edward Matocha 1, wildcat 2 miles east of Charlotte field on the Dobrowelski prospect, has been abandoned at 7252 feet. A drill-stem test at 7189-97 feet in the top of the Edwards lime recovered 750 feet of salt water. This dry hole is in a 411-acre tract in the William McFaddin Survey 522.

Medina County: Rio Seco Oil Company's Amberson 1, wildcat 3¼ miles north of D'Hanis, has resumed drilling after setting surface casing to 800 feet. Georgetown lime was topped at 689 feet and hole drilled on to 800 feet where operations were held up while waiting on surface casing. Projected depth is 5000 feet.

Milam County: Charles Rosener's Fritz von Gonten 2, 350 feet southwest of the No. 1 well at Minerva Rockdale, has been completed on pump for a potential of 2.3 barrels of oil daily. The small producer has no gas or water with the oil and production is from slotted liner at 627-672 feet, total depth.

Zavala County: The Texas Company's Cross S. Ranch 1, wildcat 6 miles north-northwest of Crystal City, drilled below 3702 feet in shale. This projected 8000-foot test is in Sect. 53, Subdivision "D," Cross S. Ranch, Pedro Jose de Aguirre Grant A-2.

New MER Figures Listed By Texas Rail Commission

"Most efficient rates of production" for Texas fields, announced last week by the Railroad Commission following hearings held during July, August and September, show very few substantial changes, according to Chairman Olin Culberson. An order effective October 7 will be issued soon in which the new MER figures will be incorporated.

Culberson expressed surprise that evidence presented by operators at the several hearings indicated that heavy production during the war had adversely affected only a few fields.

Previous MER ratings for Texas fields were made in 1943.

☆ Lower Texas Coast

Foley-Holzmark Area Wildcat Makes Try for Production

Beeville area wildcat makes production try; first oil producer at Cosden-Wilcox completed; wildcat between Mineral and Ray-Wilcox fields being completed; wildcat northeast of Mt. Lucas gas field makes production tests; Refugio wildcat tests condensate sands.

Bee County: Sam Donzis' Holzmark 1, wildcat in the Foley-Holzmark area 10 miles northwest of Beeville, is being tested as a prospective pool opener after logging a sand with oil saturation at 3490-3502 feet in the Hockley zone. A sand and shale series with oil odor was cored at 3425-85 feet. This test is 1380 feet from the northwest line and 1435 feet from the southwest line of J. A. York Survey and about a mile south-southeast of Foley field production.

Mackhank Petroleum Company's W. D. Walton et al 1, first oil producer at Cosden-Wilcox field, has been completed on initial gauge of 150 barrels of oil daily through 9/64-inch choke. Tubing pressure was 1300 pounds, casing pressure 2250 pounds and gas-oil

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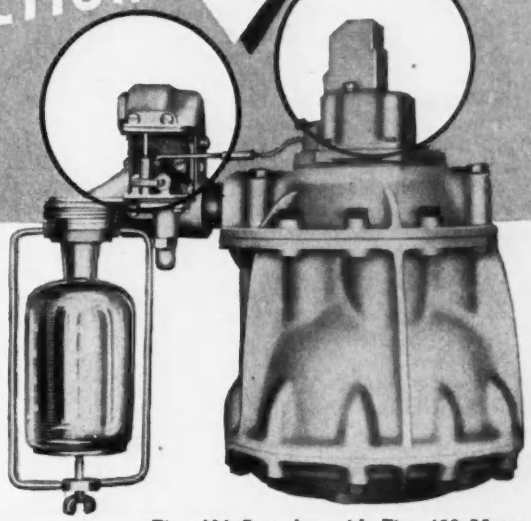

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ratio 1600/1. Production is from the Wilcox at 7044-56 feet and total depth is 7322 feet with 5-inch liner set on bottom. This well is about ⅔ mile south-southwest of the same company's Freeland 1, gas-condensate discovery well completed several years ago.

H. B. Zachry's Boothe 1, wildcat between Mineral and Ray-Wilcox fields, has plug set at 7675 feet after testing gas-condensate production from perforations at 7732-42 feet and 7750-90 feet. Pipe has been reperforated at 7582-92 feet and 7603-25 feet for dual gas-condensate completion. Total depth is 8074 feet with 5½-inch casing set to 7994 feet.

Live Oak County: Henshaw Brothers & E. H. Smith's Schwartz et al 1, wildcat 2 miles northeast of the Mt. Lucas gas field, is being completed by workover rig. The drilling rig was moved off after setting casing to total depth of 4495 feet. The well is in John McMullen Survey A-30.

Refugio County: Wil-Texas Oil Company & Herman Brown's Jamie Hynes 1, wildcat 3 miles northwest of Refugio and a mile northwest of the Refugio field, is making production tests after setting 7-inch casing to total depth of 7453 feet in sidetracked hole. A gas-condensate sand was cored in the original hole at 6490-6510 feet, and on drill-stem test at 6490-98 feet developed 330 pounds working pressure in 5 minutes and recovered 245 feet of gas-condensate cut mud and 5 feet of condensate. After drilling ahead the drill pipe stuck at 6662 feet and the hole was plugged back to 4572 feet and sidetracked. This test is in M. Arocha Survey A-79.

☆ Upper Texas Coast

Confirmation Test in Josey Ranch Field Is Gas Well

Confirmation test at Josey Ranch is gas well; new oil well completed in Hutchins-Lakeview field; casing set in Tide Haven confirmation test; Damon Mound flank test abandoned.

Harris County: L. M. Josey's Fee 2-A, confirmation test in the Josey Ranch field, has been completed as a gas well. This well is 3300 feet northwest of Fee 1-A, discovery well for the field, completed in July, 1945, for an open flow calculation of 31 million cubic feet of gas daily. The Fee 2-A flowed some condensate with the gas, production being from perforations at 6951-58 feet, the same level as the discovery well. Total depth is 7375 feet with 7-inch casing set to 7372 feet for completion.

Wharton County: McDannald Oil Company's E. W. Johnson 1-B, 3187 feet east-northeast of the discovery well in the Hutchins-Lakeview area, has been completed for a potential of 120 barrels of oil daily through 10/64-inch choke. Pressure on tubing was 250 pounds with 500 pounds pressure on casing. Total depth is 4538 feet with 7-inch casing on bottom and perforated for completion at 4527-36 feet. The discovery well for this field was Lakeview Oil Company's J. E. J. Johnston 1, completed in July for a potential of 126 barrels of oil daily from perforations at 4514-26 feet.

Matagorda County: Magnolia Petroleum Company has run 7-inch casing in Live Oak Farms 2, confirmation test 1512 feet north of the discovery well in Tide Haven field. Discovery sands were topped in the test approximately 35 feet high to the discovery but failed to show commercially and hole was drilled to total depth of 10,000 feet where an electric log was run prior to setting casing. Deep sands are expected to be tested. Live Oaks Farms 1, discovery well for the field, produces from perforations at 8450-56 feet.

Brazoria County: General Crude Oil Company's Belle Wisdom 7, wildcat on the west flank of Damon Mound in Abraham Darst Survey, has been abandoned after drilling to 4744 feet. At 4491 feet 5½-inch casing was set on bottom and a test made at 4471-80 feet where the well showed salt water with no evidence of oil or gas. The well was then drilled on to 4744 feet before being abandoned.

Geological Field Trip

The Southeastern Geological Society recently completed its fourth field trip to southeastern Alabama to study the Tertiary formations. Copies of the guide book covering the field trip may be obtained for $3.00 from the Society, P. O. Box 841, Tallahassee, Florida. Other publications available are: Guidebook, Second Field Trip (southeastern Georgia), $4.50; Guidebook, Third Field Trip (western Florida), $3.00; Tentative Correlation Chart for the Tertiary Formations of Eastern Alabama, Georgia and Florida (separate from the Fourth Field Trip Guidebook), 50 cents and; Petroleum Directory of the Southeastern States (1946), $1.00.

☆ South Louisiana

Pressures Drop to Zero on Tests of Alliance Prospect

Pressures drop to zero during production test in Alliance area prospective discovery; new sand discovered at Bayou Blue; Weeks Island test abandoned, another located; Lake Pontchartrain discovery given potential.

Plaquemines Parish: The California Company's E. P. Brady 4, Unit 4, prospective field discovery in the Alliance area, came in through the drill stem flowing oil and gas on ⅛-inch choke with 1800 pounds pressure and 2400 pounds shutin pressure only to have pressures drop to zero when tubing was run. The well was then shut in and built up to 4000 pounds pressure, but when opened again pressures dropped to zero a second time. Casing is perforated with 120 shots at 13,476-496 with total depth of hole at 14,187 feet and 5½-inch casing cemented on bottom. This well is approximately 3 miles southeast of the discovery in Bayou de Fleur field.

Iberville Parish: In the Bayou Blue field Union Sulphur Company has reworked Schwing Lumber & Shingle Company 6 and completed it in a new oil-producing sand for the field. On potential the well flowed 162 barrels of 41.8-gravity oil daily through 7/64-inch choke with 1350 pounds flowing pressure on tubing and gas-oil ratio 488/1. The new producing level was logged at 6902-12 feet with casing perforated for production at 6902-08 feet. This well was originally completed December 18, 1942, for an initial production of 175 barrels of 36.2-gravity oil daily from perfora-

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tions at 6512-32 feet. Total depth is 6939 feet with 5½-inch casing set on bottom.

Iberia Parish: Humble Oil & Refining Company has abandoned J. M. Burguieres 1-B, outpost test at Weeks Island. This test was junked in sidetracked hole at 9982 feet after having considerable trouble with heaving shale. The first hole was drilled to 10,461 feet before plugging back and sidetracking. This dry hole is located in 44-14s-7e.

Shell Oil Company has located Smith-State 3, Unit 1, in the general area of its 2 present producers in Weeks Island field. The test will be drilled to total depth of 14,500 feet with company tools. It is in 13-14s-6e.

St. Tammany Parish: The Atlantic Refining Company's State-Lake Pontchartrain 1-A, Lease 318, Big Point area discovery, 11-9s-12e, Lake Pontchartrain, has been completed for a potential of 165.8 barrels of condensate and 6,255,000 cubic feet of gas daily through ⅜-inch choke. Tubing pressure was 2250 pounds and the condensate gravity 51 with no water in the flow. Production is from perforations at 7180-88 feet, total depth being 11,052 feet with 5½-inch casing set to 9370 feet. This is the fourth wildcat drilled recently in Lake Pontchartrain by Atlantic.

☆ North Louisiana

Shallow Oil Field Opened by Plain Dealing Area Wildcat

Wildcat 2 miles north of Plain Dealing opens new shallow oil field in Bossier Parish; Jackson Parish deep test waiting on orders.

Bossier Parish: Barnsdall Oil Company's Carter-Burton 1, wildcat in C NW NW 26-23-13w, 2 miles north of Plain Dealing, was completed as a pumping producer in the Tokio sand, and in a state potential test rated 54.72 barrels of crude per day. Production is coming from 3228-65 feet, the same producing zone found in the old Sarepta and Carterville field, 8 miles to the east. It is considered a new shallow field discovery. Further tests are planned before new locations are made, but results are said to be sufficient to justify further drilling. The well went to 12,386 feet and plugged back to 5262 feet.

Jackson Parish: Shell Oil Company's Tremont Lumber Company 3, in 21-15-1w, is waiting on orders at 12,000 feet.

Claiborne Parish: The Ohio Oil Company's W. E. DeLoach 1, 22-23n-8w, is drilling below 9913 feet in search of Smackover. Watched with widespread interest, this deep test is an offset to the same operator's Bond-Beene deep discovery, 22-23-8, in the old Haynesville field.

Richland Parish: Hunt Oil Company took over C. W. Sharp and F. B. King's wildcat Wooten 1, C NE NW NE 36-15n-5e. Production casing was cemented at 4000 feet in preparing to test the Tuscaloosa carrying shows of oil from 3801-08 feet. Operators have tried 4 unsuccessful drill-stem tests.

DeSoto Parish: Jarvis, Marcel and Schoonmaker's N. B. James 1, C 4-11n-14w, 1 mile from the Spider field, perforated Rodessa porosity at 4874-84 feet and was preparing for another drill-stem test, 2 others having failed. The well tested gas and distillate through 62 shots from 6048-65 feet in the Pettit. Total depth is 6840 feet.

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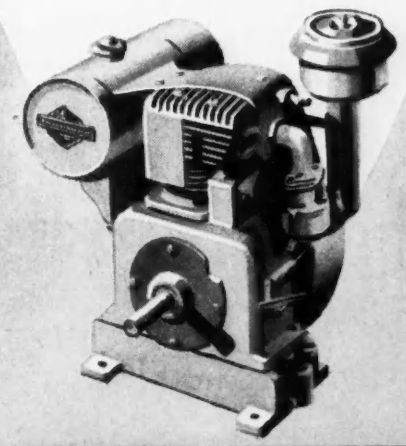

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☆ Arkansas

Lafayette County Discovery Continues to Test on Pump

Lafayette County discovery testing on pump; Pace City discovery finaled.

Lafayette County: Two discoveries are now registered on the fault line of the county. McAlster Fuel Company pumped 139 barrels of fluid, 88 percent oil and 12 percent salt water, during a 19-hour test at Adams Estate 1-A, SW NW 16-16s-24w, ½ mile west of Lewisville, and 3 miles east of Spirit Lake field, recent discovery. Production is from 3977-92 feet. Testing on pump continues, with the hope that salt water influx will decline.

Ouachita County: Joe Mucher, Trustee has finaled Josie Smith 1, C NE SE SW 30-15s-17w, discovery of the Pace City area, 3 miles east of Gum Creek. The well gauged 20 barrels of 28-gravity oil on pump, with 2 barrels of salt water per day. Production is through 24 perforations from 2758-62 feet, with total depth 3563. This discovery is also on a fault line play.

Columbia County: McAlester Fuel Oil Company's Alexander A-1, NE SE 17-17-19, 1 mile west of production at Village Mills, is below 7270 feet in the Buckner.

Indian Leases Sold

Forty-five tracts were sold at a recent sale of oil and gas leases of the Five Civilized Tribes at Muskogee, Okla., bringing a total bonus of $32,253.65. The tracts comprised 3622.75 acres.

☆ Mississippi

Superior's Forrest County Test Nearing 15,000 Feet

Forrest County deep test nears 15,000 feet; 15 tests active in Brookhaven field, where Sun prepares to complete well; Madison County well tested after pumping oil.

Forrest County: The Superior Oil Company's Cassie Bradford 1, SEc SW NW 1-3n-13w, is drilling below 14,925 feet. The well is expected to go to about 15,000 feet, a new drilling depth record for the state, after which it will undertake to develop any shows which may have been recovered. The well has been drilled tight and no shows have been officially announced but it is reported that encouragement was obtained in the lower horizons after 7⅝-inch string of casing was set to the 13,000-foot zone. Two other prospects are also readying up for tests in the county. H. H. Duck and J. Willis Hughes are moving in material for C. O. Herchenhahn in 13-5n-12w, and permit has been issued to Morgan and Norton of Shreveport to drill U.S.A. 1 in SE SW 15-1s-13w.

Lincoln County: In Brookhaven field 15 tests are active. Sun Oil Company's Leon Case NEc 17-7n-7e, installed pump and was running tests preparatory to completion. Danciger Oil & Refining Company's V. G. Allen 1, SEc 5-7n-7e, set production string to 10,328 feet and was waiting on cement. Saturated section was indicated at 10,276-311 feet.

In the reactivated Mallalieu field, about 10 miles south of Brookhaven, Humble Oil & Refining Company's M. C. Randall 1, SEc 17-6n-8e, was preparing to run core tests below 6840 feet. A drill-stem test at 3928-52 feet recovered only mud and sand with heavy salt water.

Madison County: Vaughey & Vaughey's John Whitworth 1, SWc NE SE 11-11n-3e, Pickens field, was running tests preparatory to completion after pumping 24 barrels of oil per day from initial test of the productive Eutaw horizons below 4826 feet.

Issaquena County: Burns & Miller's Mohanna 1, NE NW 11-18n-3e, wildcat, is drilling in the Tuscaloosa zone below 5877 feet with no shows reported. Cores from 5439-49 feet recovered only lime sand and salt water.

Jefferson County: Humble's J. Fred Gordon B-1, wildcat in 44-9n-1w, is drilling below 8463 feet in shale with no encouragement. In the Fayette field where 6 tests are active, Humble's M. R. Smith C-1, 27-9n-1w, is drilling below 10,100 feet. Fair oil shows were recovered from sand at 9868-78 feet.

Claiborne County: Sun Oil Company's W. R. Hammett 3, 15-11n-1e, Bruinsburg field, is drilling below 5037 feet in chalk after continuously testing the hole. Shows of gas have been indicated at 1590 feet, and in the 2600-foot section of the Wilcox zone. Well is drilling on the flanks of the Bruinsburg dome.

Adams County: Sohio-Roeser & Pendleton's Baker-Beach 1, 34-6n-2w, in the newly discovered LaGrange field, is preparing to set production string after bottoming at 6216 feet. A drill-stem test at 6212-16 feet had a fair amount of oil with productive section of sand indicated at 6214-16 feet. Sohio-Roeser & Pendleton's Parker-Baker 1, 8-6n-2w, is drilling below 4672 feet. Shows of oil were recovered in cores from the Wilcox section at 4599-4605 feet.

Florida

Seven tests are rigging up or drilling in the state, but only 2 of these were near or in potential pay horizons. In Monroe County, Gulf Refining Company's State 1, SWc 2-67s-29e, is working below 12,342 feet in lime after running electrical log. No shows have been recovered below 11,000 feet. In Osceola County, Humble Oil & Refining Company's Hayman 1, SEc 12-31s-33e, is drilling below 3801 feet with no shows.

☆ Michigan

Van Buren County Test Logs Free Oil in Traverse Lime

Harry Stroud's Biermann 1, NW SW SW 3-2s-14w, Van Bureu County wildcat 8 miles south of old Bloomingdale pool, logged free oil in Traverse lime at 1240-60 feet and will be acidized.

Wexford County: Gulf Refining Company's Jacobson 1, NE NE SE 11-21n-9w, closely watched wildcat, checked Dundee at 3894 feet but showed water on a drill-stem test at 3904 feet. Test will be carried 100 to 200 feet deeper to test the "Reed City Monroe" zone.

Arenac County: Basin Oil Company's Leham 1, NW SE NE 35-20n-5e, 8 miles southeast Clayton field, loomed as a failure at 3050 feet after logging Dundee at 2858 feet.

☆ Ohio

Perry County Well Taps Pays In Clinton and Medina Sands

Bearfield well pays in 2 horizons; oil showings noted in 2 Madison wells; Montgomery has gas extension; Symmes pool extended.

Perry County: Ohio Fuel Gas Company's north offset to the Murray Penrod, Calvin Embrey 1, SE NW 22 Bearfield Township, had 2 gas pays in the Clinton sand totaling 900,000 cubic feet and a pay in the Medina sand of 300,000 cubic feet. Clinton was logged at 3766-96 feet and the Medina sand at 3872-76.

Two wells were drilled-in in the south part of Madison Township; Shuff and Bucy's Roy Hammer 1, NW NW 33, showed some oil with 200,000 cubic feet of gas, and Preston Oil Company's C. W. Shaw 1, NE NW 33, had a good showing of oil. Both wells are to be shot.

Ashland County: Ohio Fuel found an extension a mile south of the old gas pool extending into Sect. 1, Montgomery Township. The completion, Howard Jones 1, NW SW 12, was tubed natural at 600,000 cubic feet in the Clinton sand, 2649-2655 feet with a pressure of 900 pounds.

Lawrence County: Ohio Fuel's S. S. Willis 1, NW SE 13, Decatur Township, a west offset to its Moulton 1, extended the Symmes pool. Clinton sand from 3048-63 feet yielded 575,000 cubic feet and had a rock pressure of 900 pounds.

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☆ Rocky Mountain Area

Big Horn County, Wyoming, Prospect Has Water on Test

Big Horn County, Wyoming, wildcat shows water on drill-stem test after coring saturated dolomite; Stanolind's Park County discovery is 377 feet in Madison; Pure completes deep Embar well; Continental has Weber sand discovery in Elk Springs wildcat, Colorado; Carter's wildcat in Uintah County, Colorado, shows water on test after coring saturation.

Wyoming

The Kerr-McGee and Phillips Petroleum Company wildcat test of Dry Dome at Government 1, NW NW NE 2-50n-92w, Big Horn County, 15 miles southeast of Greybull, cored 20 feet of saturated dolomite in the Phosphoria section topped at 3439 feet, but on drill-stem test showed only water. The test was made at 3430-60 feet and with tester open an hour 800 feet of salty water was recovered. The well is drilling below 3475 feet and will test Tensleep and Madison formations.

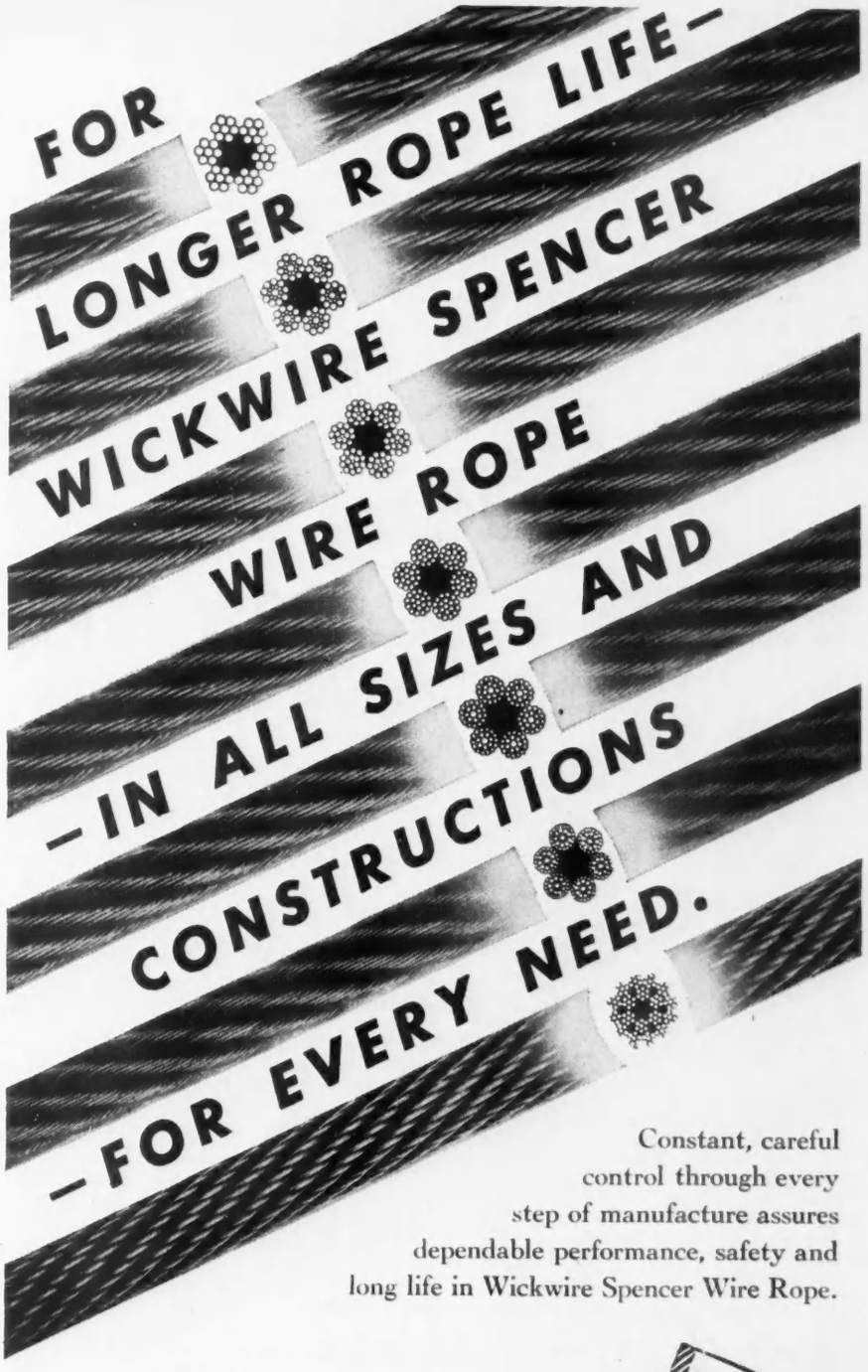
Park County: At Elk Basin, Stanolind Oil & Gas Company's Madison discovery well is now 377 feet in that formation. Below 4610 feet the well drilled a hard, tight section and on drill-stem test between 4690-4727 feet recovered only 60 feet of drilling mud. A test at 4560-4610 with tester open 1¼ hours recovered 2400 feet of oil. Madison was topped at 4350 feet.

Washakie County: The Pure Oil Company continues testing 3 deep Embar wells at River Dome, northeast of Worland. Latest completion was at Unit 3, NE SW SW 17-48n-92w, at 10,151 feet, total depth. With Embar topped at 10,003 feet it is flowing 28 barrels of oil per day, natural, and will soon be acidized. This well is a mile east of Pure's discovery, which is still testing approximately 160 barrels per day after being acidized with 7000 gallons.

Colorado

Continental Oil Company has what appears to be a Weber sand discovery in its Elk Springs wildcat, 40 miles northeast of Rangely. Its Margaret Smith 1, NW SE SW 30-5n-98w, topped the Weber at 6086 feet and cored saturated sand from 6089 to 6111 feet, total depth. On drill-stem test in this zone, with tester open 20 minutes, the well made 210 feet of clean 29-gravity oil and gas-cut mud. Seven-inch casing was cemented at 6090 feet and the well will be drilled deeper into the Weber. At Rangely, where there are some 135 wells producing 26,000 barrels per day from the Weber, that formation is approximately 900 feet thick, and it is probable the zone is the same thickness at Elk Springs. This is a considerably smaller structure than Rangely, which now has about 29,000 acres within the defined field limits. Continental has approximately 2300 acres in the Elk Springs area, with Stanolind having approximately 400 acres in the immediate vicinity of the well.

Discovery of oil at Elk Springs probably will start considerable prospecting in the northwestern Colorado and northeastern Utah sections of the Uintah Basin. Weber has been tested in the majority of producing structures on the



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eastern side of the Basin in Colorado. The Carter Oil Company is now drilling a test on its West Vernal block, Uintah County, Utah, but so far there is no oil production in the Utah section of the basin.

Utah

Carter's interesting wildcat on its unitized block northwest of Vernal had saturation in cores between 4415-4422 feet during the past week but on drill-stem test the well showed 1800 feet of water. The well is E. Davis 1, C NW NW 33-4s-20e, Uintah County, and operator continues to drill and core below 4433 feet. Union Oil of California drilled a test in 1942 at SE NE SE 21-4s-20e, which was abandoned in the Mesa Verde at 2200 feet, total depth.

☆ California

Kern County's Paloma Field Outpost Cores Good Oil Sand

Paloma outpost cores good oil sand; activity in Huntington Beach-Newport area continues, with latest producer good for 500 barrels; Miocene test in Potrero field cores oil sand; names given 2 new oil fields; drilling activity revived in 50-year-old field in Ventura County; Lospe zone test in Casmalia field swabs little oil.

Kern County: Chanslor-Canfield Midway Oil Company's outpost on the northeast flank of the Paloma field in 35-31s-26e has cored 23 feet of oil sand at around 11,463 feet. Well is the lowest structurally on the "M-M" contour in the field. Two more locations have been staked on the same side of the field. Western Gulf Oil Company will drill L.A.A.C. 16-6 in 6-32s-27e and Superior Oil Company is grading for Houchin 83-34 in 34-31s-26e.

Tide Water Associated Oil Company has completed Tupman 43-9 in the Arvin area, 9-31s-26e, flowing 190 barrels of 32.6-gravity oil, 7 percent cut, through a 20/64-inch choke.

The state's deepest wildcat, Pacific Western's National Royalties 1 in 5-26s-22e, 10 miles east of the Lost Hills field, is drilling below 15,250 feet in hard shale.

Orange County: The Huntington Beach-West Newport area is among the most active and interesting in the state. The general area east and south of the Huntington Beach field lay inactive for many years. Results of wildcatting were unfavorable, but interest continued. Finally, geologists and engineers figured out the territory and the current activity is a result.

Three new locations were made in the West Newport area. California Exploration Company will drill Harby 1 230 feet south and 458 feet west from the corner of 18th and Whittier streets. W. L. Meeker and Russell D. Garner have staked Pongratz 1 and 2 in the same part of the field.

Standard Oil Company of California has staked its second well in the West Newport area. Deeble-Smith 1 will be drilled in 13-6s-11w.

In the small producing area southeast of the Huntington Beach field, Signal Petroleum Company's Callens 2 is currently producing 500 barrels of 22.6-gravity oil through 22/64-inch choke. Company is rigging up for Deeble 1 in 13-6s-11w. L. & W. Oil Company's Surf 1 in Sect. 13 is drilling below 4650 feet in shale with streaks of sand.

Union Oil Company resumed drilling in the Brea field and completed Stearns 88 flowing 908 barrels of 25.2-gravity oil through ¼-inch choke. Total depth is 3901 feet. Equipment is being moved in for another well on the Stearns property.

Los Angeles County: Interest centers in Basin Oil Company's Standard-Brick 1, Miocene test at the northwest end of the Potrero field, near Inglewood. Formation has been shale with streaks of oil sand. Total depth is 10,082 feet with top of Miocene logged at 8400 feet. Operator plans to whipstock several wells under an adjoining residential section if the current try is a producer. Operator lacks gas for fuel and is changing over to oil before testing several promising intervals.

Names have been given 2 new oil fields. British-American Oil Producing Company's discovery in the Gardena area has been named the Alondra field, the discovery well being across the street from Alondra Park. Six Companies' discovery near the Los Angeles airport is to be known as the Hyperion field.

Ventura County: Union has completed the first of a series of wells in Torrey Canyon, a small area near Piru that has been producing a little oil for 50 years. Torrey 64 in 5-3n-18w is pumping 40 barrels of 30-gravity oil.

Santa Barbara County: Bell-Casmite Oil Company's Lospe zone test, Morganti 7 in the Casmalia field, swabbed light oil on a test at 3860-3920 feet.

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ARKANSAS WILDCAT

Ouachita County—Pace City Oil Discovery: Joe Mucher, Tr.'s Josie Smith 1, ne se sw 30-15s-17w, 3 mi e Gum Crk, Midway 1084, Arkadelphia 1595, Nacatoch 1730, Saratoga 1950, base Annona-top Meakin 2200, 1st Blossom 2350, 2nd Blossom 2443, 3rd Blossom 2480, 4th Blossom 2520, Tokio 2568, L. Cret. 2685, perf 24 shots 2758-62, pump 20 bbls 28-gr oil, 2 bbls salt wtr, pb 2783, comp 10-1-46, td 3563.

CALIFORNIA WILDCATS

Kern County—Failures: Pacific Gulf Oil Co.'s Karpe 1, 30-28s-29e, Round Mt area, Pyramd Hills 2485, Vedder 2593, abdn 9-22-46 at 2643.

Richfield Oil Corp.'s Berry Corehole 1, 30-28s-21e, S Belridge area, abdn 9-20-46 at 807.

W. T. Woodward-American Placers' Flickinger 1, 36-30s-22e, McKittrick area, abnd 9-28-46 at 6897.

Western Gulf Oil Co.'s San Emigdio 3, 31-11n-22w, San Emigdio area, abnd 9-30-46 at 4019.

Fresno County—Failure: Shell's Kreyenhagen 23-8, 8-22s-16e, Jacalitos area, Temblor 6020, Kreyenhagen 6980, abnd 10-1-46 at 7051.

FLORIDA WILDCAT

Franklin County—Failure: Pure's Gex-Lewin 3, abnd 9-30-46 at 5060.

ILLINOIS WILDCATS

Bond County—Failure: T. M. Conray's Hediger 1, ne nw ne 20-4n-2w, abnd 9-25-46 at 1316.

Effingham County—Failure: Inland Producers' White 1, sw sw ne 23-7n-5e, abnd 9-26-46 at 2478.

Jasper County—Failures: Nat'l Assoc. Pet. Co.'s Payne 1, ne se ne 16-7n-9e, abnd 9-25-46 at 2995.

Russell P. Johnson's Miller 1, se se ne 32-7n-10e, abnd 9-25-46 at 2861.

Jefferson County—Failures: J. V. Canterberry's Kent 1, nw ne se 12-3s-3e, abnd 9-25-46 at 3073.

Ashland O & R Co.'s Irwin 1, se ne sw 24-4s-4e, abnd 9-27-46 at 3471.

Madison County—Failure: Aetna Oil Co.'s Ashawer 1, nw ne ne 29-4n-6w, abnd 9-27-46 at 1927.

Marion County—Failures: Paul Doran's Smith 1, nw nw se 11-3n-1e, abnd 9-25-46 at 1575.

Ralph Halbert-Paul Doran's Jones 1, nw sw nw 8-4n-3e, abnd 9-26-46; td, 2031.

Shelby County—Failures: W. R. Britton's Kensil 1, nw se se 21-11n-4e, abnd 9-26-46 at 1927.

Pure's Walker 1 "A", nw se 16-12n-5e, abnd 9-26-46 at 2130.

Wayne County—Failure: J. W. Menhall's Stein 1, se ne se 18-1n-8e, abnd 9-27-46 at 3233.

KANSAS WILDCATS

Pratt County—Oil Discovery: Bridgeport Oil Co.'s Pride 1 "C", ne ne ne 24-29s-13w, pump 164 bbls fr Viola 4483-90, comp 9-24-46 at 4490.

Pratt County—Failure: Parks & Lindas' Baker 1, c w½ nw sw 34-27s-12w, abnd 9-25-46 at 4502.

KENTUCKY WILDCATS

Butler County—Failure: Hudson & Sons' Gardner 1, 20-I-33, abnd 9-25-46 at 675.

Daviess County—Oil Discovery: J. C. Ellis et al's Shipp Heirs 2, 9-P-28, pump 24 bbls fr Paluxy 1019-21 ft, comp 9-26-46 at 1021.

Daviess County—Failure: Snyder & Vickers' Rafferty 1, 17-P-28, abnd 9-24-46 at 2112.

NORTH LOUISIANA WILDCAT

Winn Parish—Failure: H. L. Hunt's Goodpine F-133-1, 590 fr nl 520 fr el 25-12n-5w, 2 mi e Coldwater, Pettit 8402, abnd 9-28-46 at 8678.

NORTH LOUISIANA OUTPOST

Franklin Parish—S. Big Creek Failure: J. K. Wadley-J. M. Forgotson's Breece Lbr. Co. 1, c se se sw 18-16n-8e, ¾ mi nw of fld, chalk 2940, igneous rock 2943-3600, abnd in Glenrose 9-26-46 at 3662.

SOUTH LOUISIANA WILDCATS

St. Tammany Parish—Gas-Condensate Discovery: Atlantic's State-Lke. Pontchartrain 1-A, 17,368 s 767 e of sec 11-9s-12e, Big Point area, pay 7157, perf 48 shots 7180-88, flow 165.8 bbls 51-gr oil, 6,255,000 gas, ⅝-in, gor 37,800/1, tp 2250 lbs, comp 9-23-46 at 11,052.

Terrebonne Parish—Failure: Joe W. Brown's Lyons 1, s 41° 11 min w 1491-4 to lcn fr nec sect 38 in lot 5, 38-18s-18e, abnd 9-27-46 at 10,035.

SOUTH LOUISIANA NEW PAY TEST

Iberville Parish—Bayou Blue Oil Discovery: Union Sulphur Co.'s Schwing Lbr. & Shgl. Co. 6, (OWWO), 968 e of c 67-9s-11e, oil pay 6902-12, perf 36 shots 6902-08, flow 162 bbls, 41.8-gr, 7/64-in, gor 488/1, tp 1350 lbs, recomp 9-7-46 at 6939.

MICHIGAN WILDCATS

Allegan County—Failure: J. W. Lang Co.'s Woudwyk 1, ne se sw 16-4n-15w, abnd 10,146 at 1636.

Van Buren County—Failure: Harris and Fortney's Barney 1, ne nw sw 16-1s-16w, abnd 10-3-46 at 1043.

MISSISSIPPI WILDCATS

Grenada County — Failure: J. R. Ockhart's Guy Fite 1, Eutaw 2230, Tuscaloosa 2477, abnd 9-27-46 at 4545.

Smith County—Failure: Pan-American's U. S.A. 1, Eutaw 5868, Tuscaloosa 6260, Massive sd 7438, abnd 9-27-46 at 7654

MONTANA WILDCAT

Meagher County—Failure: R. C. Tarrant's Holliday 1, c sw sw 35-9n-10e, Meagher area, Frontier 1170, abnd 9-27-46 at 1288.

NEW MEXICO WILDCAT

San Miguel County—Failure: E. P. & Paul Waggoner-Buster Wharton's nw nw nw 26-18n-26e, abnd in granite wash 2170.

OHIO WILDCATS

Mahoning County—Failure: E. Ohio Gas Co.'s A. & M. Lloyd 1, Lot 55, Austintown Township, abnd 9-25-46 at 3555.

Meigs County—Failure: Theiss et al's Cool-

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ville Bank 1, ne se 17, Orange Township, abnd 9-26-46 at 1723.

Muskingum County—Failure: Industrial Gas Corp.'s Sidney Whitmire 1, se se 26, Salt Creek Township, abnd 9-26-46 at 6740.

OKLAHOMA WILDCATS

Choctaw County—Failure: H. F. Paul's Norwood 1, nw sw nw 17-5s-16e, abnd 10-4-46 at 1034.

Cotton County—Failures: James N. Crofton's Champion 1, ne nw ne 31-1s-11w, abnd 10-3-46 at 2503.

Frizzell & Bryan's Meaders 1, nw se ne 19-3s-10w, abnd 10-4-46 at 1516.

Sullivan Brothers' Graham 1, sw sw sw 32-3s-10w, abnd 9-28-46 at 2040.

R. E. Barbre's Parrish 1, se ne se 32-2s-11w, abnd 9-27-46 at 2020.

L. H. Choates Graham 1, se se nw 15-4s-11w, abnd 10-4-46 at 1750.

L. H. Choate's Scruggs 1, nw nw se 16-4s-11w, abnd 10-4-46 at 1854.

Seminole County—Failure: E. W. Whitney's Hays 1, ne nw nw 33-7n--7e, abnd 8-28-46 at 2400.

Stephens County—Failure: Amerada's Passchall 2, nw se se 29-1s-5w, abnd 10-4-46 at 7329.

WEST TEXAS WILDCATS

Andrews County—Failure: Seaboard Oil Co.'s University 1-A, c ne nw sect 18, blk 12, elev 3300, San Andres 4410, abnd 10-2-46 at 4470.

Ector County — Andector Oil Discovery: Humble's R. B. Cowden 1-B, c ne ne T & P Ry. 11, blk 45, T-2-N, 1⅞ mi ne of N. Goldsmith-Devonian prod, elev 3289, anhy 1410, ll 4130, Glorietta 5180, Tubb 6000, base Permian 7720, Simpson 7815, Ellenburger 8548, flow 1176 bbls 44.2-gr oil, gor 110/1, ⅜-in, 500 gals acid via Ellenburger perf 8545-85, td 8600, pb and comp 10-1-46 at 8596.

Howard County—Failure: Santa Fe Pet. Co.'s Christian-Phillips 1, c se sw T&P Ry. 48, blk 32, T-2-N, elev 2628, brown ll 2825, San Andres 3100, Clear Fork 3610, abnd 9-24-46 at 4168.

Lubbock County—Failure: Seaboard Oil Co. et al's Jenkins 1, 1980 snl 1943 wel L. & S. V. Ry. 27, blk D, elev 3309, anhy 1620, San Andres 3170, Glorietta 4570, Tubb 5700, abnd 10-2-46 at 7520.

Lynn County—Failure: Ray A. Albaugh et al's Sutton-Magnolia 1, c ne se E. L. & RR. Co. 22, blk H, elev 3102, anhy 2180, Yates 2930, brown li 3780, San Andres 4250, abnd 9-28-46 at 7505.

Menard County—Failure: Phillips' Ricks 1, c se se BBB&C Ry. 8, A-1829, abnd 6-1-46 at 2809.

Pecos County—Failure: Olson Dr. Co.'s Roots 1, c sw se T. & St. L. Ry. 17, blk 118, elev 3039, Yates 2280, Queen sd 2726, abnd 10-2-46 at 5005.

Presidio County—Failure: Presidio Oil Co. (was H. D. Wilcox's) Conring 1, (OWDD), 500 snl 1189, ewl GH&SA Ry. 102, blk 4, otd 1040, elev 4497, Eagleford shale 3890, abnd in ash 9-10-46 at 4522.

WEST TEXAS OUTPOST

Ward County—S. Ward Extension: Roy D. Golston et al's W. L. Moody 1, c w¼ of e¼ H&TC Ry. 32, blk 34, 1 mi n by w prod, elev 2537, Yates 2440, flow 30 bbls 31-gr oil, gor 320/1, 6/64-in fr Yates 2487-2550, shot 150 qts nitro 2495-2540, td 2725, pb 2550.

WEST CENTRAL TEXAS WILDCATS

Callahan County—Failure: Great Lakes Carbon Corp.'s Smith 1, 340 snl 1260 wel BBB&C Ry. 34, elev 2007, anhy 470, base Saddle Creek 1295, Dothan 1390, Palo Pinto 3111, Bend 4380, Mississippi 4698, Ellenburger 4763, abnd 10-1-46 at 4849.

Fisher County—Failure: T. A. Kirk-L. H. Choate's Stevenson 1, (OWDD), 660 out sec sect 5½, John Rodman sur, otd 4054, elev 2003, Valera 2290, Noodle Creek 3233, Flippen 3496, Swastika 3980, Ellenburger 6045, abnd 9-30-46 at 6116.

McCulloch County—Failure: W. G. Weatherford's Pumphrey 1, 570 snl, 1510 ewl sect 799, C Mendell sur, elev 1167, Bnd 590-712, Marble Falls 890-1085, Barnett 1085, Ellenburger 1167, abnd 9-23-46 at 1506.

Taylor County—Failure: Ungren-Frazier et al's Reynold's 1, 330 wel, 1650 nsl T&P Ry. 19, blk 18, elev 1873, Swastika 3150, abnd at 3163.

NORTH TEXAS WILDCATS

Archer County—Failures: L. T. Burns et al's Rayborn 1, 3850 snl, 1530 ewl S. P. Ry. 3, abnd 9-27-46 at 1883.

A. R. Dillard et al's Herndon 4, 150 out nwc S. P. Ry. 1, abnd 9-25-46 at 1645.

Grace & Grace's Cooper 1, 150 out swc n½ blk 6, Isaac Holeman sur, abnd 9-26-46 at 1400.

Clay County—Failure: Grace & Grace's Edward's 1-A, 2450 snl, 1263 ewl T. M. Hughes sur, Bend 5815, broken cong 5837-60, abnd 10-2-46 at 6009.

Grayson County—Failure: Humble's Fallon 1, 142 snl 600, ewl W. H. Trollinger sur, ll 5186, abnd 10-2-46 at 6208.

Wilbarger County—Oil Discovery: Ed. C. Lawson-Anderson-Prichard Oil Corp.'s W. J. Baker 1, sw sw ne H&TC Ry. 85, blk 14, elev 1216, Canyon 3245, pump 93 bbls 39.3-gr oil, 500 gals acid open hole, comp 9-9-46 at 3298-3310.

Young County—Failures: Edwards Bros. et al's Singleton 1, 330 out nec N. J. Timmons sur, elev 1092, abnd 10-1-46 at 4080.

Warren Oil Corp.'s Graham 1-B, 330 out nwc TE&L Co. sect 618, elev 1119, Bend 3898, Mississippi 4879, abnd 9-29-46 at 5000.

EAST TEXAS WILDCATS

Houston County—Failure: Magnolia's Southern Pine Lbr. Co. 1-A, 330 sw of nel, 1538 nw of sel of 110-ac tr, Leonard Williams sur, 2 mi se Weches, elev 351, Midway 3375, Austin 5699-5961, Woodbine 5961, Georgetown 6488, abnd 10-3-46 at 7407.

Titus County—Failure: Humble's Guaranty Bond State Bank 1, 660 out nec Wm. Watts sur, elev 312, Georgetown 3850, abnd in Paluxy 10-6-46 at 5391.

SOUTH CENTRAL TEXAS WILDCAT

Milam County—Failure: James C. Walker's D. R. Maddox 1, 330 fr s&el 65-ac lse, 2800 fr nwl 3100 fr swl J. J. Acosta sur, chalk 1228, abnd 9-17-46 at 2200.

LOWER TEXAS COAST WILDCATS

Nueces County—Failure: Brown & Wheeler's Lamar Folda 1, 660 fr nel 660 fr sel blk 4, Wm. J. Robertson Farm tr on 75-ac lse, Enrique Villareal Gr, abnd 9-23-46 at 9186.

Refugio County—Gas Discovery: Barnsdal's Mrs. E. T. Morrow 1, 467 fr n&el 97.01-ac lse, in nec Edward Perry sur, 1 mi s McFaddin gas prod, 1¼ mi sw McFaddin oil prod, pay 2240, perf 46 shots 2251-62, flow gas, no gge, ¼-in, comp 9-10-46 at 7165.

Willacy County—Failure: Jay Simmons' Gilbert Kerlin & Am. United Life Ins. Co. 1, 330 fr el 381 fr nl lot 22, Harding-Gill sbdn, sh 61, San Juan de Carricitos Gr, 38.24-ac lse, 1½ mi w Willamar fld, abnd 9-26-46 at 9517.

LOWER TEXAS COAST OUTPOST

Victoria County—N. Kerran Extension: Roxoil Drlg. Co.'s J. J. McCutcheon 1, 330 fr ne& sel 400-ac lse, 330 fr se&swl blk 12, Brown & Dodd sbdn, 330 nw of sel Agipito de Leon Gr, 2850 sw prod, pay 4699, perf 64 shots 4699-4715, flow gas, no gge, ⅛-in, tp 1000 lbs, comp 8-15-46 at 4755.

UPPER TEXAS COAST WILDCATS

Ft. Bend County—Failure: Roxoil Drlg. Co.-Sam Dunnam's H. L. Schroeder 1, 440 fr sw&sel 60-ac lse, sw of w¼ sect 34 H&TC sur, 2 mi n Needville fld, abnd 10-1-46 at 7808.

Harris County—Failure: Stanolind's L. H. Caesar 1, 466 fr s&el 40-ac lse, 600 e 466 n of nwc T. Hubanks sur, 1 mi se nearest Fairbanks prod, abnd 9-27-46 at 8265.

Orange County—Oil Discovery: Hinkle Drlg. Co.'s G. M. Adcock 1, 8100 ne Pt. Neches prod, start nwc Adcock 399-ac tr go 4044 sely alg wly/l lse th 380 nely at ra to lcn, 80-ac lse, J. Stephenson sur, pay 8774, perf 24 shots 8774-78, flow 300.15 bbls 37.4-gr oil, 0.1% wtr, 16/64-in, gor 732/1, tp 1390 lbs, comp 9-15-46 at 8954.

Montgomery County—Failure: Kirby Pet. Co.'s Geo. Sealy Est. 1, 3540 fr swl 2654 fr nwl 1000-ac lse and J. C. Pitts sur, 5 mi n of Conroe fld, abnd 9-20-46 at 5010.

UPPER TEXAS COAST NEW PAY TEST

Wharton County—Lakeview (Hutchins) Gas Discovery: W. A. Clark, Jr.'s Anna Tobola Est. 1, 660 fr nely&sely/l 80-ac lse, I&GN sur sect 15, 4000 w ne Lakeview's Johnston 1 oil disc, pay 4796, perf 10 shots 4796-4806, flow dry gas, no gge, tp 1420 lbs, comp 9-18-46 at 5014.

Mississippi Meeting Set

The Mississippi-Alabama Division of the Mid-Continent Oil & Gas Association will hold its annual membership meeting in Jackson, Miss., November 4, according to C. L. Morgan, president.

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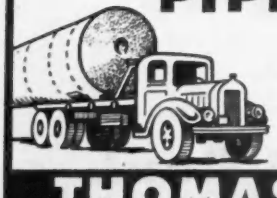

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WILDCAT STARTS

ARKANSAS

White County R. B. Curtis' Sheridan 1, c nw sw 31-6n-7w, lcn.

CALIFORNIA

Kern County: Gannon, Gannon & Aslin's 69-J-4, 36-29s-20e, Temblor Ranch area, prep to spud.

Richfield Oil Corp.'s Bear State Corehole 1, 30-28s-21e, S. Belridge area, dr.

Richfield Oil Corp.'s Berry Corehole 1, 30-28s-21e, S. Belridge area, dr.

Richfield Oil Corp.'s Berry Corehole 2, 30-28s-21e, S. Belridge area, lcn.

Los Angeles County: Union Oil Co.'s Simi 8, 22-3n-17w, Simi area, lcn.

Orange County: D. D. Dunlap's Aldrich 4, 18-6s-10w, Huntington Beach area, lcn.

Signal Pet. Co. of Calif.'s Deeble 1, 13-6s-11w, Huntington Beach area, ru.

Standard's Deeble-Smith 1, 13-6s-10w, Huntington Beach area, lcn.

Ventura County:: Superior-British-American's Black 1-A, 13-4n-18w, Del Valle area, ru.

ILLINOIS

Clay County: Delta Ref. Co. et al's McCawley 1, se sw sw 17-3n-7e, drlg.

Clinton County: R. R. Benoist et al's Krevs 1, sw se nw 26-2n-3w, lcn.

T. M. Conray's McAdams 1, se ne ne 19-3n-1w, lcn.

Cumberland County: K. R. Wilson's Hollensbe 1, 22-9n-10e, drlg.

K. R. Wilson's Rue 1, w½ ne sw 27-9n-10e, lcn.

Edwards County: Phillips' Matina 1, sw ne nw 18-1s-14w, drlg.

Fayette County: Paul Doran's Manley 1, ne nw se 10-4n-1w, lcn.

R. L. Robbins' Outhouse 1, sw sw se 15-4n-1w, lcn.

Franklin County: Indiana Farm Bureau's Fuel 1, ne ne ne 2-6s-4e, lcn.

Richland County: C. R. Craft's Welsh 1, ne nw nw 14-3n-11w, lcn.

White County: W. G. Fortner's Pyle Heirs 1, nw se sw 13-5s-8e, lcn.

INDIANA

Gibson County: Deep Vein Coal Co.'s Beadles Heirs 1, nw se sw 31-1s-11w, lcn.

Halliburton Houghton's Sloan 1, se sw nw 4-2s-10w, lcn.

Spencer County: D. Stinson's John Ernest 1, w½ sw 8-6s-4w, drlg.

KENTUCKY

Marshall County: William Bell's Walker 1, 21-G-15, lcn.

McLean County: H. H. Weinert's Breeden 1, 23-L-26, drlg.

Webster County: Ross Bartmes' Duncan 1, 17-N-23, drlg.

KANSAS

Cowley County: H. H. Blair's Morgan 1, sw sw ne 10-30s-5e, rur.

Ellis County: C. E. Ash's Craig 1 "A", se se ne 4-11s-16w, woc 179.

Westgate-Greenland's Lundy 1, se se se 16-11s-16w, rur.

Ellsworth County: Cities Service's Cook 1 "B", ne ne sw 19-14s-10w, rur.

Marion County: D. T. Ingling's Jost 1, sw sw sw 22-19s-2e, cellar.

Norton County: Sohio et al's Reeves 11 ne ne sw 3-2s-22w, lcn.

Pratt County: Sohio et al's Stalcup 1, ne ne ne 15-26s-12w, sur hole.

NORTH LOUISIANA

Caddo Parish: Richard W. Norton's Collin's 1, c ne se 4-22n-15w, Paluxy test.

SOUTH LOUISIANA

Ascension Parish: Atlas O&R Corp.'s Wheeler & Wortham 1, 6930 s 68° 45 min e th 513 n 51° 45 min e fr nwc sect 49 in 48-10s-14e, drlg 3004, 9000-ft test.

Humble's Hibernia Bnk. & Tr. Co. 1, fr nwc sect 68, s 3700 alg sect line th 400 e at ra in 68-10s-14e, 11,000-ft test.

Iberia Parish: Humble's J. M. Burgieres Co. 2-B, fr m/wly/cor sect 44 go 3704.1 sely alg swl th nely at ra 330 to lcn in 44-14s-7e, 14,000-ft test.

St. Martin Parish: Humble's Williams 1-B, fr sec sect 25 1980 nly/alg el th wly parallel to sl 660 to lcn in 25-14s-11e, 12,000-ft test.

MICHIGAN

Gladwin County: C. E. Weller's Bessler 1, sw sw se 12-18n-2w, dr.

Newago County: Mich. Devonian's Corey 1, ne sw ne 16-16n-11w, lcn.

Osceola County: Rowmor Corp.'s Thomas 1, se se nw 27-20n-10w, dr.

Saginaw County: J. O. Mutch's Narring 1, nw ne se 5-10n-5e, lcn.

St. Clair County: F. W. Potts' Ogden 1, nw nw ne 9-7n-17e, dr.

MISSISSIPPI

Forrest County: Morgan & Norton's U.S.A. 1, se sw 15-1s-13w, lcn.

Washington County: C. H. Murphy, Jr.-Sun's J. T. Brown 1, sec 19-16n-7w, lcn.

MONTANA

Fergus County: Rock Creek Bench Oil Wessen 1, ne ne nw 36-14n-16e, Rock Creek Bench, lcn.

NEW MEXICO

Eddy County: Mesa Retailers et al's Blindsnake 1, 330 snl 2982 ewl 2-16s-25e, spud 6000-ft cable test.

Richfield Oil Corp. et al's Lake McMillan Unit 1, c sw ne 36-20s-26e, 6000-ft test.

E. Orcutt et al's F. E. Kepple 2, (OWDD) sw nw se sect 19-17s-27e, elev 3305, td 1375, dr 1415.

Roosevelt County: Continental-Cooperatives Ref. Assn. et al's K. Alston Unit 1, c se se 20-7s-35e, 6000-ft prePermian test.

OHIO

Holmes County: Ohio Fuel Gas Co.'s J. J. Miller 1, lot 7, Paint township, lcn.

Ohio Fuel's T. P. Butler 1, nw se 30, Washington township, lcn.

OKLAHOMA

Cimarron County: Stanolind's McCoy 1, c se nw 11-3n-8eCm, lcn.

Cotton County: C. B. Richardson's Jones 1, sw sw ne 9-3s-10w, rur.

Kingery Brothers' Smith 1, sw sw se 10-1s-9w, lcn.

Neal Hood Oil Co.'s Bone 1, ne se se 8-4s-10w, woc.

L. H. Choate's Landrum 1, sw sw ne 16-4s-12w, rur.

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M. P. McLaughlin's Suddeth 1, nw nw nw 1-5s-11w, lcn.

Hughes County: Mid-Continent's Brown 1, nw nw se 25-8n-8e, lcn.

Kay County: Westgate-Greenland's Wentz 1, sw se nw 28-28n-1e, rur.

Lincoln County: Harper-Turner's Test 1, ne nw se 4-13n-4e, lcn.

Osage County: Ohio Oil Co.'s Test 1, se se ne 2-23n-8e, lcn.

WEST TEXAS

Andrews County: Royal O&G Co.'s Lotus Oil Co. 1, c se sw PSL 18, blk A-48, 1½ mi w of s Fullerton-Devonian fld, 9000-ft Devonian test.

M. H. Marr and Grady Vaughn's Lotus Oil Co. 1-27, c sw se PSL 27, blk A-48, mim for 9000-ft test.

Crockett County: Shell's University 1, 638 ewl 680 snl sect 21, blk 39, 1½ mi sw of blk 39 pool pending discovery, Ellenburger test.

J. P. Pringle et al's Shannon-Stanolind 1, c nw ne E. L. & RR Co. 14, blk BB, 3000-ft test, dr.

Surry County: Seaboard Oil Co.'s J. R. Randall 1, 440 snl 761 wel H&TC 257, blk 97, 4000-ft Clear Fork test.

Terrell County: Irvin Svoboda et al's J. M. Bassett 1, 2310 snl 410 ewl T. & St. L. Ry. 1, blk 149, 4000-ft cable test.

Winkler County: Amon G. Carter et al's S. B. Wight-Gulf & Ohio 1, c sw sw PSL 29, blk 40, 7500-ft Clear Fork test.

WEST CENTRAL TEXAS

Jones County: R. H. Roark-L. F. Hooker & Roark's E. T. Moore 1, 1650 nsl 2108 ewl T&P Ry. 3, blk 16, 2700-ft cable test.

Runnels County: E. S. Price et al's Claud Brookshire 1, 2909 wel 392 nsl of J. H. Parramore sur 136, 5500-ft test.

Taylor County: S. B. Roberts & A. C. Scott's M. Ray 1, 330 out swc E. L. & RR Co. sect 5, 3500-ft rotary test.

NORTH TEXAS

Archer County: Geo. W. Cooper et al's W. H. Taylor 1-D 30 out nec sect 15, ATNCL sur, 5200-ft Ellenburger test.

Baylor County: S. R. Gillespie et al's F. Matula 1, ne ne se T&NO Ry. 221, 2600-ft Canyon test.

Clay County: Bell O&G Co.'s Ruth Dowlin-Schnable 1, 330 out nwc 80-ac lse, 1930 e 330 s of nwc A. C. Hinsley sur, but in BBB&C Ry. 1, near river, 2800-ft rotary test.

Continental's Roscoe Scott 1, 467 out nwc TE&L Co. 3239, Ellenburger test.

Cooke County: Sun's O. P. Cason 1, 467 out nec of 100-ac lse, n½ J. L. Hodges sur, 4000-ft Ellenburger test.

Geo. W. Graham et al's N. L. Fenley 1, 8530 snl 330 ewl Melville Langham sur, 2000-ft test, dr 1960.

Jack County: F. Kirk Johnson et al's P. H. Riley 1, 330 out of m wly/nwc of P. K. Stewart sur, 5500-ft test.

Texas Canadian Oil Corp. (was L. T. Burns') M. N. Garrett 2, (OWDD), 450 wel 2296 nsl BBB&C Ry. td 4891, dd to 6000.

Montague County: Eason Oil Co.'s Temple Yarbrough 1, 1231 ewl 2150 snl F. J. Bellows sur, 4500-ft test.

Lesh & McCall's R. W. Cunningham 1-D, 243 n 900 e of nwc Mary Burnsides sur, but in Griffin Bayne sur, 2980-ft test.

Wichita County: Ashton et al's J. P. Cody 1-B, 150 out nec sw¼ blk 320, Waggoner Colony lands, 1900-ft test, sp.

Wilbarger County: Nat'l Assn. Pet Co.-Texas Co.'s J. D. Crouch 1, nw nw ne H&TC Ry. 24, blk 16, 5000-ft test, dr 2210.

Young County: J. L. Davis et al's B. B. Cooley 1, 900 nsl 100 wel TE&L Co. sect 242, 750-ft cable test.

TEXAS PANHANDLE

Hansford County: Phillips' I. V. Turner-Yesman 1, 2707 wel 2634 nsl GH&H Ry. 88, blk 2, mim for 6000-ft test.

EAST TEXAS

Franklin County: W. G. Post et al's J. H. Anderson 1, 660 out sec of tr J. M. Waters sur, 5 mi se Mount Vernon, 7500-ft Rodessa test.

Kaufman County: B. S. Barnes et al's B. Coleman 1, 330 ewl 660 snl of 210-ac tr, 3500 wel 660 snl J. J. Travine sur, 4 mi n Mabank, rur 4500-ft test.

EAST TEXAS BORDER COUNTIES

Nacogdoches County: Dunigan Bros.' Arkan Cranford 1, 467 fr wl 330 fr sl nly/swc 184-ac tr, 7050 fr nl 6863 fr el Jose Maria Musques sur, drlg 500 on 4600-ft test.

Panola County: Continental's G. W. Bird 1, 500 fr nl 1700 fr nly/wl 219.4-ac tr in Sarah Harrell sur, 6500-ft test.

SOUTH CENTRAL TEXAS

DeWitt County: Continental's Fred Ruschaupt 1, 1500 fr swl 330 fr sel 200-ac tr, 2630 se nwl Pat. Dowlearn sur, 9000-ft Wilcox test.

SOUTHWEST TEXAS

Duval County: Hewit & Dougherty's Peter McBride 1, 330 fr s&el lot 4, blk 20, Santos Garza sur, 330 fr s&el 240-ac lse, 5 mi e of Realitos, 5600-ft test.

Hiawatha O&G Co.'s Atlee Parr 1, 345 fr wl 945 fr sl blk 54, Wheeler-Splane sbdn, "San Andres" Gr, 3385-ac lse, 3 mi e of E. Leghorn fld, 6000-ft test.

Newman Bros. Drlg. Co.-R. S. Hays' Lula Pursch 1, 330 fr s&el 80-ac lse, 2310 fr wl 3620 fr nl BS&F sur 115, 1 mi ne Seven Sisters fld, ru 3300-ft test.

Santa Clara Oil Co.-Progress Pet.-Producers Corp. et al's Mary Dunn Meaney et al 1, 2310 fr n&wl 1500-ac lse, Diego Hinojosa Gr, 4781 n alg wl Diego Hinojosa Gr, prep mi, 4500-ft test.

Starr County: Lockhart & Co.'s Lockhart & Co. Fee 1, 467 fr sly/sl 467 fr ely/el sur 933 and 1248.1-ac lse, 4½ mi w Rincon fld, 5500-ft test.

Webb County: Killam & Hurd's D. G. Garcia 1, 800 fr el 330 fr nl blk 9, sur 786, on 120-ac lse, ¼-mi ne Oilton, 2500-ft test.

UPPER TEXAS COAST

Austin County: Phillips' Louise Schulz et al 1, 225.43-ac lse, J. Hodge sur, 9500-ft test.

Brazoria County: McCarthy O&G Corp.'s Mrs. Ella M. Corbett 1, start at nwc 480-ac tr where I&GN RR intersects n lse, go 2277.58 sw alg nwl lse and RR th 450 sely at ra to lcn, W. Roberts Lge, 11,500-ft test.

Chambers County: Humble's State-Galveston Bay 2-D, 660 fr nwl 1980 fr swl sect 137, 1865-ac lse, ½-mi e ne dry hole D-1 in sect 200, Smith Point area, 9500-ft test.

Ft. Bend County: Martin Thompson's Mrs. Ethel M. Hand 1, start at swc Robt. Peebles sur go 525 w th 3191 n to lcn in 40-ac unit out of 553.5-ac tr, David H. Milburn sur 3 mi sw Thompson fld, 6500-ft test.

Jefferson County: Humble's Dr. Rogers Pierson 1, 467 fr el 1800 fr sl 200-ac tr, John J. French sur, 3 m se Lovell Lake prod, 10500-ft test.

Liberty County: Humble's Zoe B. McDonald 1, 200 fr sl 217.3 fr e&wl sect 30, Harvest Acres sbdn, 270-ac tr, Josiah Blackman sur, 3½ mi sw nearest Cleveland prod, 4 mi e Splendora gas prod, 14,000-ft test.

San Jacinto County: Roxie Wright et al's H. L. Comb's & Foster Lbr. Co. 1, 660 fr s&el 40-ac lse, Samuel Lust sur, s of Manning's Mercy extension well, W. Mercy area, mir 8500-ft test.

Wharton County: Sparta Oil Co.-Mikton Oil Co.'s A. A. Mullins 1, 330 fr sl 1178 fr el 90-ac lse, S. G. Austin 3 1/6 Lge Gr, s flk Boling Dome, 7000-ft test.

Wirt Franklin Pet. Corp.'s E. J. Stevens 1, 660 fr s&wl 440-ac tr, J. J. Dillard sur, 2 mi n Louise gas prod, 6500-ft test.

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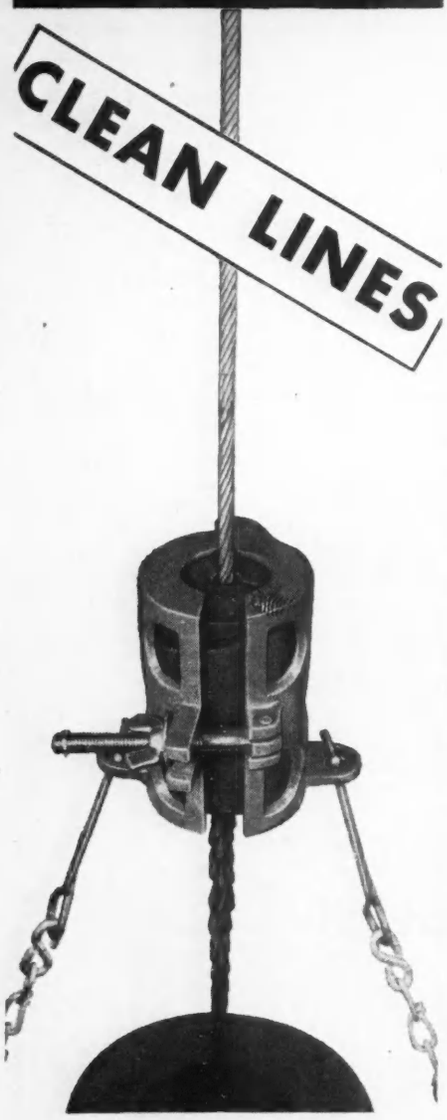

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SQUEAKS from the BULL WHEEL

Poet's Nook

A girl who was named Henrietta
Just loved to wear a tight swetta.
The reason she had—
To keep warm—wasn't bad,
But two other reasons were betta.

The Woman's Way

He broke a long and uneventful silence in the moonlight with this: "I just love wild game."

"So do I," she chirped hopefully. "You know any, honey?"

In the Lurch

"Have you any excuse for getting so disgustingly drunk?"

"Yes, Judge, I have. I got into bad company. There were five of us and I bought a quart of whiskey and then found out the other four didn't drink."

This Curious World

Does your girl have a negative personality? Try developing her in a dark room.

Many a woman is too lazy to exercise discretion.

The Jones family can't save money because the neighbors are always doing something the Jones can't afford.

No girl need worry about being supported if she has a figure that doesn't need support.

Penalty for bigamy: Two mothers-in-law.

Definition: A pedestrian is a man with a wife, a daughter, a son and an automobile.

"Hell!" said the Devil, picking up the telephone.

Less Enduring Evil

During the war a London couple was so terrified by the idea of being bombed that it was decided to send Junior, age 9, to an uncle in the country. Three days later they received a telegram: "Am returning boy. Please send bomb instead."

Life Is Like This

The patter of little feet was heard at the head of the stairs. The bridge party hostess motioned for silence.

"Listen," she said softly. "The children are going to deliver their goodnight message. It always does something to me inside when I hear them."

There was a moment of hushed expectancy. Then from the head of the stairs: "Mom, Willie found another bedbug."

This One Smells

A minister awoke one morning to find a dead mule on his lawn. He called several city officials to have the animal removed, but without success, and finally he appealed to the mayor.

"But," cracked the mayor, "I thought it was a minister's duty to bury the dead."

"So it is, my friend, but I always notify the relatives of the deceased."

Real Asset

"Now that I've told you about my past, do you want to marry me?"

"Sure thing."

"And I suppose you'll expect me to live it down?"

"No, baby. I'll expect you to live up to it!"

The Soft Answer

"Now, sir," said the lawyer, "you heard what the last witness said and yet your evidence is to the contrary. Am I to infer that you doubt her veracity."

"Not at all. I merely wish to make it clear what a gosh awful liar I am if she's speaking the truth."

On Second Thought

"Shave and massage, barber."

"Okay—and by the way, I understand you've been running around with my wife."

"Just make it a massage."

No Joke, Son

"I seem to have run out of gas," he said softly.

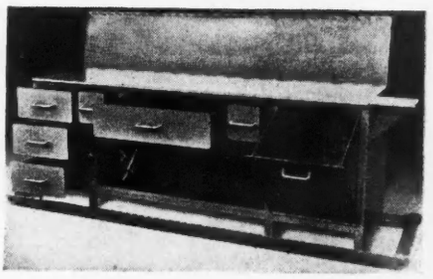
Her beautiful face was turned up to his; her eyes were glowing dizzily from beneath heavy lids. Her head swam.

Slowly, he bent over her.

Why not? He was her dentist.

OWEN

TYPE "A" WORK BENCHES



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Six big drawers and a rag bin provide storage space for all the tools on your rig. Drawers are weatherproof and mounted on rollers for easy operation.

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MEN IN THE INDUSTRY NEWS

Courtney C. Brown, head of the petroleum economics division of Standard Oil Company (N. J.), has been appointed vice president of the World Trade Foundation of America as a consultant in connection with research activities. The committee will review important economic research undertaken by the staff affecting two-way world trade, and will release reports on their findings. Before becoming associated with Standard, Brown was associate director of research and statistics at Chase National Bank.

»

L. Vincent Collings was elected to the board of directors of Standard-Vacuum Oil Company, with which company he has been connected since 1916, except for a term at Harvard Law School and in private law practice. He was named general counsel of the company in 1944.

»

James H. Doolittle, vice president of Shell Union Oil Corporation in charge of aviation activities, who has just returned from a European survey for the company, attended the dedication ceremonies October 11 of a Missouri town which has been named in his honor. Before becoming Doolittle, Mo., the community was known as Centerville. It is in the Ozark foothills, 100 miles southwest of St. Louis.

»

F. E. Melott, geologist in charge of Texas operations for Deep Rock Oil Corporation, has transferred headquarters from Wichita Falls to Fort Worth, with offices in the Petroleum Building.

»

Sam R. Harwell and **L. E. Frensley** have been appointed comptrollers for Magnolia Petroleum Company and Magnolia Pipe Line Company, Dallas, respectively. Both formerly were assistant comptrollers.

»

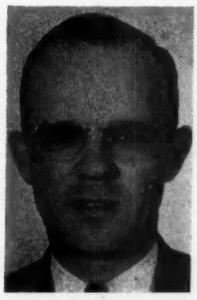
J. A. Boege has been appointed a member of General Petroleum Corporation's operating committee. He is manager of the laboratories department.

»

Ralph B. Lloyd, president of the Western Oil and Gas Association, will represent the organization at a luncheon in the Los Angeles Biltmore Bowl October 18 when **Ira Mosher,** chairman of the board, National Association of Manufacturers, speaks on "The Big Job Ahead."

»

T. S. Scibienski has been made vice president in charge of land and lease and the drilling departments of La Gloria Corporation, Corpus Christi, Texas. He was manager of the departments at the time of his promotion. He joined the company in 1943, going from the general managership of Texon Drilling Company.



T. S. Scibienski

J. H. Puls has been appointed assistant manager of The Texas Company's Pacific Coast division producing department. He will be succeeded as superintendent of drilling and production operations by **A. W. Sands.** Puls started with the company in 1925 in refinery and pipe line engineering at Long Beach. Sands has been an employe of the company since 1926, and has been assistant to the division superintendent in the Los Angeles Basin area, superintendent of production operations in Ventura district, and assistant superintendent of drilling and production operations for the Pacific Coast Division.

J. H. Puls

»

A. B. Campbell, former eastern representative of Hughes Brothers, has become executive secretary for the National Association of Corrosion Engineers at Houston. Campbell has taught in the engineering extension department of Iowa State College, and was an electrical engineer on the Iowa Board of Railroad Commissioners from 1920-23.

»

Jake Q. Snell is the Houston district scout for Tide Water Associated Oil Company, replacing **Charles Hitt,** who is leaving to do independent leasing in the West Texas, New Mexico and Colorado areas.

»

Oscar Hatcher, chief geologist with Helmerich & Payne, Inc., resigned to become an independent operator, with headquarters in Tulsa.

»

Douglas McMurray, former Oklahoma geologist who has been active in the Illinois basin, will soon return to Oklahoma, making his headquarters in Oklahoma City.

»

E. M. Butterworth, president of American Overseas Petroleum Company of San Francisco, a management company jointly owned by Standard Oil Company of California and The Texas Company for operations in the Netherlands Indies, left New York by air for Holland.

»

William H. Montgomery has been appointed manager of the Industrial Relations Department of Socony-Vacuum Oil Company. Montgomery has been refinery manager of the company's Lubrite Division, East St. Louis, Ill., for three years. He succeeds **W. H. Zabriskie,** who has been appointed secretary of Socony-Vacuum's manufacturing committee.

»

F. S. Stinson, president of the National Oil Scouts and Landmen's Association, is making a tour of the Rocky Mountain area. Stinson is employed by Humble Oil & Refining Company at Midland, Texas.

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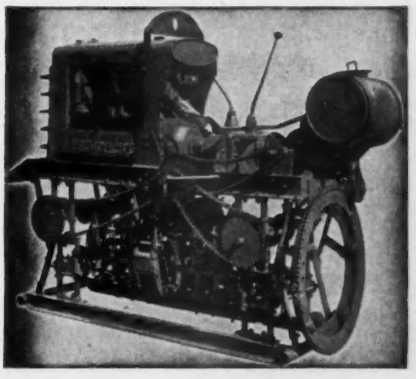

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MEN IN THE INDUSTRY NEWS

Charles B. White, head of the investment banking concern of Charles B. White & Company, Houston, was elected to the board of directors of Oil Center Tool Company, according to **Robert L. Tilley,** president of the company. Oil Center Tool, begun in 1927, has plans for considerable expansion, in which White's experience in industrial finance will be of particular value.

Charles B. White

»

Thomas E. Fiske, attorney for Standard Oil Company of Indiana, has taken over the company assignments previously handled by **Frank E. Packard.** Packard retired on annuity September 1 after having been general and tax attorney for more than 25 years. Fiske joined the company June 1 after serving as executive secretary of the Taxpayers' Federation of Illinois at Springfield since its inception in 1940.

»

Edward L. Carter, export representative for Shaffer Tool Works, Tulsa Boiler & Machinery Company; W. C. Norris, Manufacturer; Frank Wheatley, Pump & Valve Manufacturer; Ben F. Kelley Company; and the Air Operated Rotary Division of McEvoy Company, is visiting the oil fields of Venezuela.

»

A. H. Mastran and **Haskell Sobol,** both of Corpus Christi, Texas, have incorporated the Dorene Oil Company.

»

Sam Grinsfelder, vice president of Union Oil Company, has assumed responsibility for all field department operations, including development and production engineering, for all of the company's operating areas in the U. S. **Dudley Tower** has been appointed manager of operations of the Texas-Gulf Division, with headquarters in Houston.

»

Manford C. Alcorn has been made assistant pipe line manager for Shell Oil Company in California with headquarters at Los Angeles.

»

Ted Miles, former Union Oil Company executive, has joined the University of Southern California faculty as professor of petroleum engineering.

»

Myrl Cline has been appointed Southwest Texas representative for Hinderliter Tool Company, Tulsa. Cline's headquarters are in Alice, Texas.

»

Walter B. Briggs, formerly manager of the power transmission division of Ideal Industries, Inc., has been appointed general manager, power transmission division, of Lovejoy Flexible Coupling Company, Chicago.

George A. Hays, Jr., Dallas, vice president of Oil Well Supply Company, has resigned. He had been in the oil field equipment business since 1922, when he joined Wilson-Snyder Manufacturing Corporation, Pittsburgh, which was merged with Oil Well Supply in 1930. He has been vice president since 1939.

»

E. L. Alderson has been appointed field engineer of oil field rubber products for Raybestos-Manhattan, Inc.'s Manhattan Rubber Division. He has served as Manhattan's sales representative in the Texas and Gulf Coast areas for many years. In his new position he will cover the oil fields of the country and will maintain headquarters at Houston, but will also operate from the company's executive offices in Passiac, N. J.

»

Harrison Wood has been appointed New York district manager of SKF Industries, Inc., ball and roller bearing manufacturers. He has been assistant district manager since 1941, and is succeeding **John D. Williamson,** manager for 23 years, who has resigned because of ill health. Wood joined SKF in 1923 as sales engineer.

»

Thomas B. Tomkinson, controller of The B. F. Goodrich Company since 1927 and a director of the company from 1928-40, will retire December 31 after 43 years of continuous service. He started with Diamond Rubber Company at 16 and at 21 was head of the cost department. He became assistant general auditor upon merger of the company with B. F. Goodrich in 1912. He was then made assistant controller, vice president and general manager of The B. F. Goodrich Rubber Company of Canada, and controller of The B. F. Goodrich Company.

»

W. Harlan Taylor, Gulf Coast supervisor for Petty Geophysical Company, Houston, has resigned to open the Taylor Exploration Company, and the Taylor Core Drilling Company. He will specialize in consulting and contracting geophysical surveys. His office will be located temporarily at 1601 South Shepherd Drive, Houston 6.

»

James D. Greensward has been named assistant to **William C. Johnson,** vice president of the general machinery division of the Allis-Chalmers Manufacturing Company, Milwaukee, Wis. Greensward has been associated with Allis-Chalmers since 1922. For the last three years, he was assistant to the treasurer in charge of contract terminations.

»

John A. Britton, Jr., of the chemical products department of Stanco Distributors, Inc., subsidiary of the Standard Oil Company of New Jersey, addressed the Mid-Continent section of the Society of Automotive Engineers at Norman, Okla., on "Synthetic Rubber, Its Properties and Production."

Robert D. Evans has joined the sales development division of Caterpillar Tractor Company as civil engineer consultant on earth-moving equipment and its applications. Evans goes to Caterpillar from R. G. LeTourneau, Inc., where he was chief field engineer. During the war, he acted as liaison between the Corps of Engineers, U. S. Army, and the LeTourneau company.

Robert D. Evans

»

Lester G. Schraub, vice president and general manager, has been elected to the board of directors of Union Wire Rope Corporation, Kansas City. He has had 23 years of experience in the steel and wire business. For 14 years he was with Keystone Steel & Wire Company, and then assumed charge of wire division sales for Sheffield Steel Corporation. In 1937 he became general sales manager for Union Wire Rope.

»

William Brinkworth, formerly sales engineer at the Ewart plant of Link-Belt Company, Indianapolis, has been transferred to the company's office in Houston, where he is assuming charge of the distribution of Link-Belt chains, sprockets, mud screens and other L-B products through oil field distributors in the Mid-Continent area. He succeeds Bob Horton, who has resigned to enter private business.

Deaths

C. Henry Hathaway, 61, assistant to the president of Gulf Oil Corporation, died in Pittsburgh October 7 after a brief illness. He had been associated with Gulf since 1932.

»

F. M. Foster, 88, pioneer Oklahoma oil operator, died of a heart ailment in Tulsa October 8. He became active in the oil business soon after he went to Oklahoma in 1901, and helped in the development of the Healdon oil field near Ardmore.

»

Carl Green, 57, superintendent of warehouses for the Arkansas Natural Companies, died of a heart attack September 7 in Albuquerque, N. M. He had been an employe of the organization 27 years.

»

William Edward Smith, 73, president of Standard Oil Company of Kentucky from 1927 to 1945, died October 2 at Louisville. He entered the oil industry in 1890 in association with his father, **Harry Smith,** one of the pioneer developers of the Franklin, Penn., oil fields, and was for many years an executive of Standard Oil Company of New Jersey and Standard Oil Company of New York. He was also connected with Socony Vacuum Oil Company, from which he resigned in 1921 to become vice president of Standard Oil Company of Kentucky.

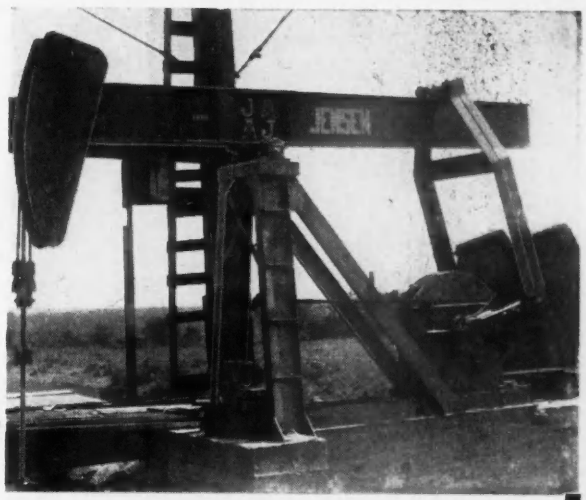
»

John L. Gorman, 47, Tulsa, assistant manager of sales, southern division, of the Mid-Continent Petroleum Corporation, died of a heart attack in Tulsa October 3. He had been with the firm 16 years. Gorman was reared in Sapulpa, Okla.

Homer E. Havenstrite, Los Angeles, 43-year-old superintendent of the R. E. Havenstrite oil properties, was killed in an automobile accident in Cajon Pass near San Bernardino, Calif., October 1. Mrs. Havenstrite was seriously injured. They were en route to Wyoming on a hunting trip.

»

Ernest E. Rabun, 34, an employee of Stanolind Oil & Gas Company since 1936, died in Alvin, Texas, October 5. He was a veteran of World War II.



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A producer friend of ours took a good look. What he saw didn't please him. His pumping costs were eating his rightful profits.

This called for action—and the producer took it. He called in his Jensen dealer who had the stuff to change the picture. Now, pumping costs are where they should be and the new unit will pay for itself in a very short time.

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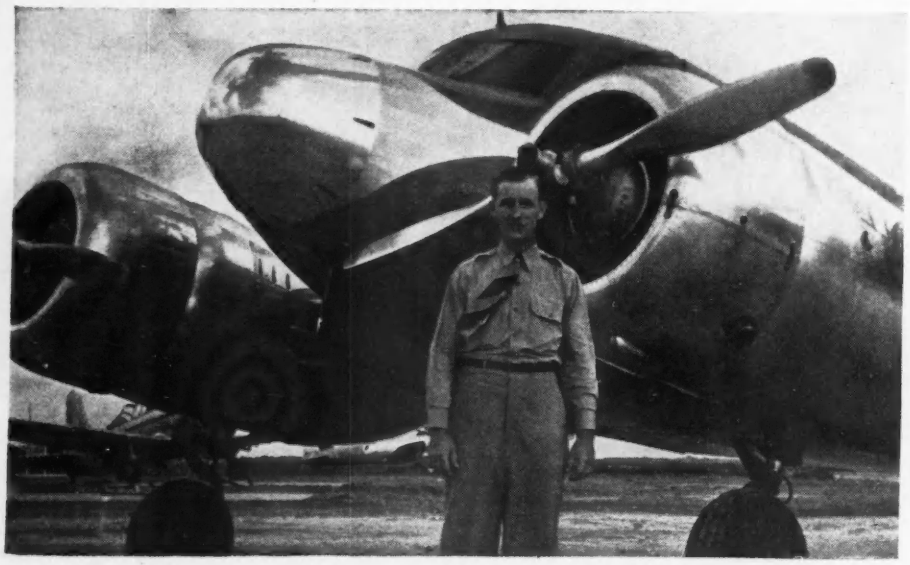
Veteran Pilot Joins Alice Supply Firm



Fredrick Mack Mills has joined the sales force of the Alice Pipe & Supply Company of Alice, Texas, and will pilot the company's twin-engine plane used in purchasing and selling drilling equipment and pipe throughout several states.

Before entering the Army Air Forces, Mills was employed by Gulf Oil Corporation, Halliburton Oil Well Cementing Company, and several drilling contractors.

A pilot of some 15 years in civilian life, he joined the Army Air Force in 1942 and served in China, India, North Africa and many other foreign countries.

General Electric Company Opens Houston Welding Division Branch

General Electric Company's Electric Welding Division has opened a branch in Houston to sell a complete line of General Electric arc welding products as well as other products of use to arc welding. The branch is in a new building 60 feet wide and 120 feet long, where facilities are available for demonstrating welding processes and techniques and a completely equipped service and repair shop is maintained. F. C. Neal, Jr., is manager and C. L. Helms office manager.

Petroleum Reservoir Engineers for Service in South America

In connection with increased development, our associated companies require experienced petroleum reservoir engineers for service in South America. Applications may be made in person or by letter to

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New York 20, New York

or

SHELL OIL COMPANY, INCORPORATED
Shell Building
Houston, Texas; San Francisco and Los Angeles, California;
and Mayo Building, Tulsa, Oklahoma.

Nowery J. Smith Properties Purchased by Parkersburg

Parkersburg Rig and Reel Company, Parkersburg, W. Va., has purchased the properties of Nowery J. Smith Company, Houston, with exception of the commercial hot-dip galvanizing business, which will continue under the name of Nowery J. Smith Company and the management of Tyson Smith. Purchase price for the Smith concern, which manufactures oil field supplies, and will manufacture various products of the Parkersburg line of oil field equipment in addition, was not disclosed.

There will be no change in the engineering, plant or office personnel. Nowery J. Smith will be elected a vice president of Parkersburg when the purchase becomes effective November 1.

$11,700,000 Expansion Program Projected by Sheffield Steel

Sheffield Steel Corporation, Houston subsidiary of American Rolling Mill Company, has announced an expansion program of more than $11,700,000, contingent upon obtaining the government-owned blast furnace on its property for which it is now bidding. The furnace, coke ovens, and iron ore mines in East Texas and coal mines in Oklahoma have been shut down since the end of the war, when Sheffield reverted to the manufacture of steel from scrap iron and scrap steel. The company is seeking to operate the furnace to relieve the shortage of pig iron for steel making and for use in the national housing program, later as a shipping point for foreign demands. With the furnace and projected facilities Sheffield hopes to triple its 1941 capacity, and to make Houston a steel center. The company has retained its skilled labor and key men and plans to add about 2000 more workers after the furnace is placed in operation.

The expansion program consists of a $1,479,802 bid for the open hearth and hot topping facilities, including a 20-year lease on the blooming mill and miscellaneous facilities and an option to purchase within 19 years at the government's "fair value" of $5,269,481. Since the War Assets Administration accepted this bid, Sheffield is rushing to completion the $2,400,000 addition of its wire mill and warehouse facilities, and will begin construction of two additional open hearth furnaces and other finishing plants which may cost $2,574,460.

Hinderliter Office Moved

The Hinderliter Tool Company, Tulsa, has closed its office and warehouse at Oklahoma City and moved to Seminole, Okla., where headquarters for the entire state, with the exception of the Northeast Tulsa area, will be established. W. F. Wilbanks will have duties of field representative added to his present job of division superintendent. J. D. Russell, who has been field representative, has been transferred to the western part of the state.

John F. Cailloux

Earl W. Miller

James A. Gray, Houston, Buys American Iron & Machine Works

James A. Gray, of James A Gray Company, Houston, has purchased the entire capital stock of American Iron & Machine Works Company, Oklahoma City, from John F. Cailloux and Earl W. Miller, president and vice president, respectively. The Gray Company and American Iron & Machine will be consolidated under the name of the latter company.

American Iron & Machine originated from a small repair shop opened by Cailloux in 1923 at Tonkawa, Okla. Miller was attracted by a patent owned by the company, and in 1925 purchased stock and became active in management. Headquarters were moved to Oklahoma City in 1926. During the war, the owners decided to concentrate their efforts on the plant in that city and in 1945 the firm's five branch field shops were sold to employes who were then running them.

Gray, a native of Oklahoma, has been active in drill pipe rental and production business, and has been associated with Standard Oil Sales Company and Coastal Drilling Company, among others. He announced there will be no changes in personnel.

Houston Oil Field Material Acquires Briggs-Weaver Stock

The Houston Oil Field Material Company, Houston, has acquired all common stock of Briggs-Weaver Machinery Company, Dallas. Approval of the purchase was given by common stockholders of Houston Oil Field Material.

Briggs-Weaver, which recently celebrated its 50th anniversary, sells and services machine tools, oil field equipment, water and power plants, hardware and electrical items. The company owns the land and buildings at 309 North Market Street, Dallas, where it has a machine shop and three-story office, wholesale and retail sales building. Total assets are valued at more than $900,000.

Houston Oil Field Material, founded in 1928, operates principally in Texas, Mississippi, Louisiana and New Mexico and also owns subsidiaries in California and Arizona. It has branch stores throughout the territories it serves and maintains a service division which furnish specially designed fishing, cutting and directional drilling tools.

Painting of First Marlow Pump Is Presented to Firm's Founder

An oil painting of the first pump made by Marlow Pumps 22 years ago was presented to A. S. Marlow, founder and head of the Ridgewood, N. J., pump manufacturing company at the organization's annual dinner.

Illustrated above is the Models AEH to AHH series of 4-cycle single cylinder Wisconsin Air-Cooled Standard Engines, to which the following specifications apply:

MODEL	AEH	AFH	AGH	AHH
Bore	3"	3¼"	3½"	3⅝"
Stroke	3¼"	4"	4"	4"
Cu. in. Displ.	23	38.2	38.5	41.3
Hp. Range	4-6	5-7	6-8.5	7-9
Weight	130 lbs.	170 lbs.	175 lbs.	180 lbs.

If your equipment calls for an engine within the above power range, it will pay you to give serious consideration to the Wisconsin line . . . noted for rugged, heavy-duty serviceability and thorough-going dependability.

In addition to the engines listed above Wisconsin 4-cycle single cylinder engines are also available in 2 to 4 hp. sizes, and V-type 4-cylinder engines can be supplied in a power range of 13 to 30 hp. Detailed data furnished on request.

WISCONSIN MOTOR Corporation
MILWAUKEE 14, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

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Oil field distributors for Wisconsin Engines and all types of utility units.

GIVE ME A LUFKIN TAPE WITH THE CHROME WHITE LINE THAT IS DURABLE
JET BLACK MARKINGS ON CHROME WHITE SURFACE... EASY TO READ
CHROME PLATED STEEL LINE WILL NOT CRACK, CHIP OR PEEL
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DERRICK CHROME CLAD
Hook attaches to pipe, makes it easier to measure casing standing in derrick. ¼" extra heavy line easily detached from sturdy frame. Durable, accurate. Order the Lufkin "Derrick" from your supply house. For free catalog write THE LUFKIN RULE CO., SAGINAW, MICHIGAN, New York City.
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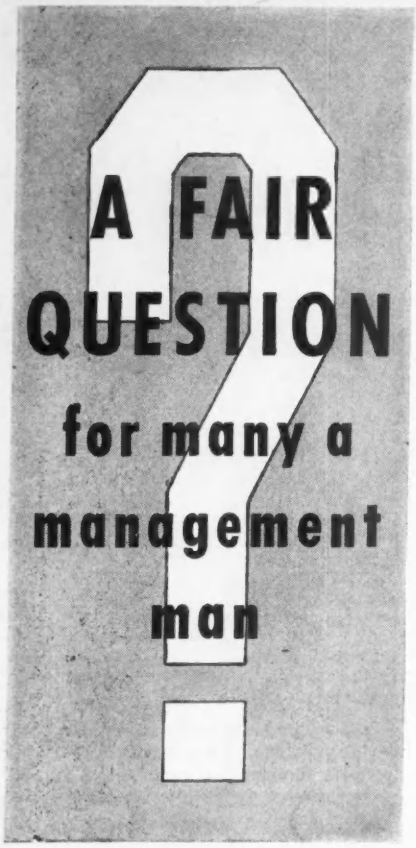

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It costs Less to Prevent Leaks than to stop them!

Don't take chances with oil-soluble thread dopes when making up casing, tubing, line pipe connections; mud, oil, steam, water lines and other drilling rig connections; Christmas tree; separator and flow line connections. Use RECTORSEAL and be sure of permanent leak-proof connection, which will save you any expensive repairs later.

The high lubricating quality of RECTORSEAL prevents galling when spinning-up pipe. Retention of its plastic elasticity for the life of the connection prevents "freezing."

Ask your supply store for RECTORSEAL No. 1 . . . the industry's proven leak preventer.

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THE POSITIVE LEAK PREVENTER

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